Axle Shafts - New Beetle

IDENTIFICATION

AXLE SHAFTS

Volkswagen New Beetle may be equipped with one of four different front axle shafts. See **Fig. 1** -**Fig. 4** .

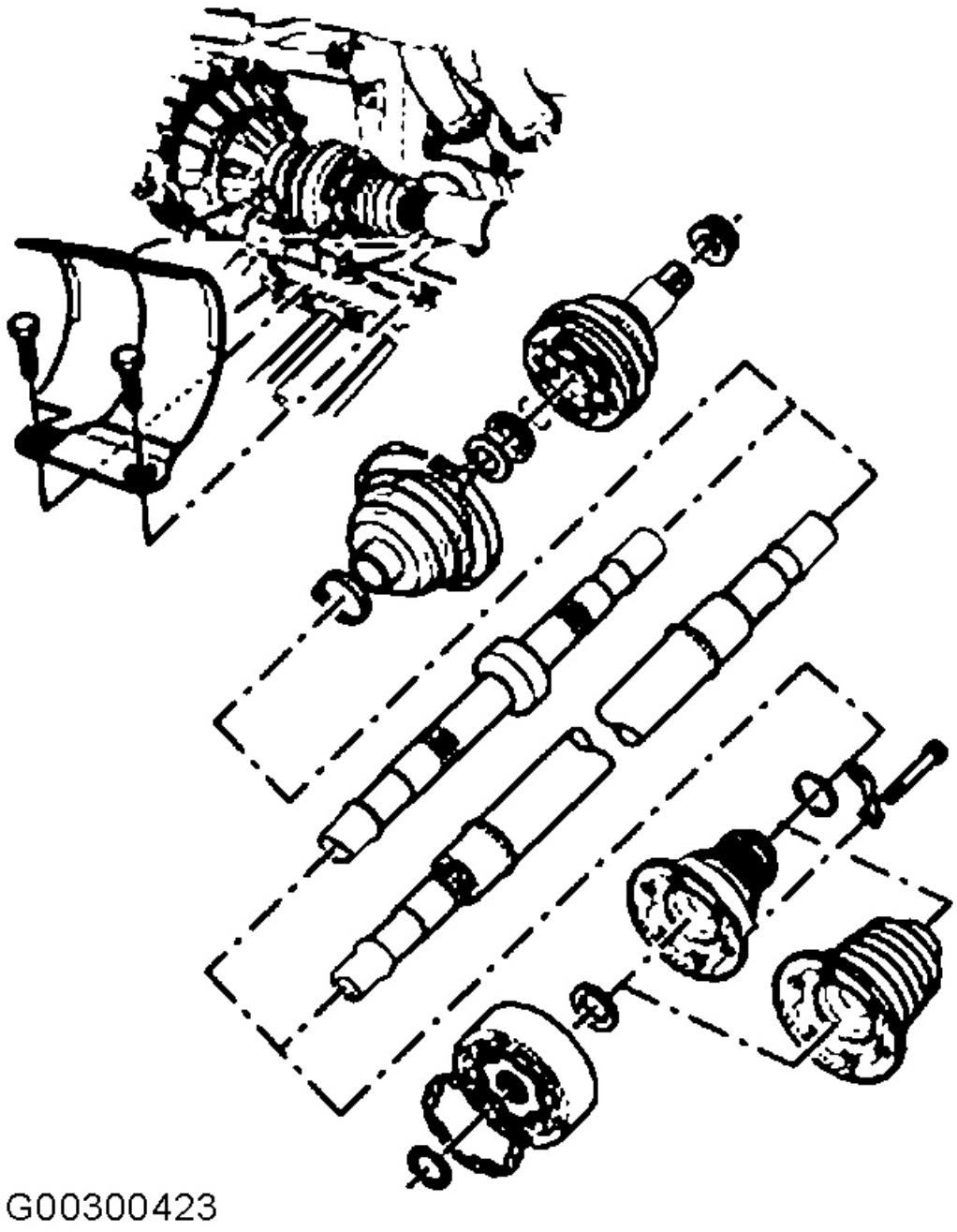


Fig. 1: Exploded View Of Front Axle Shaft & CV Joints
Courtesy of VOLVO CARS OF NORTH AMERICA.

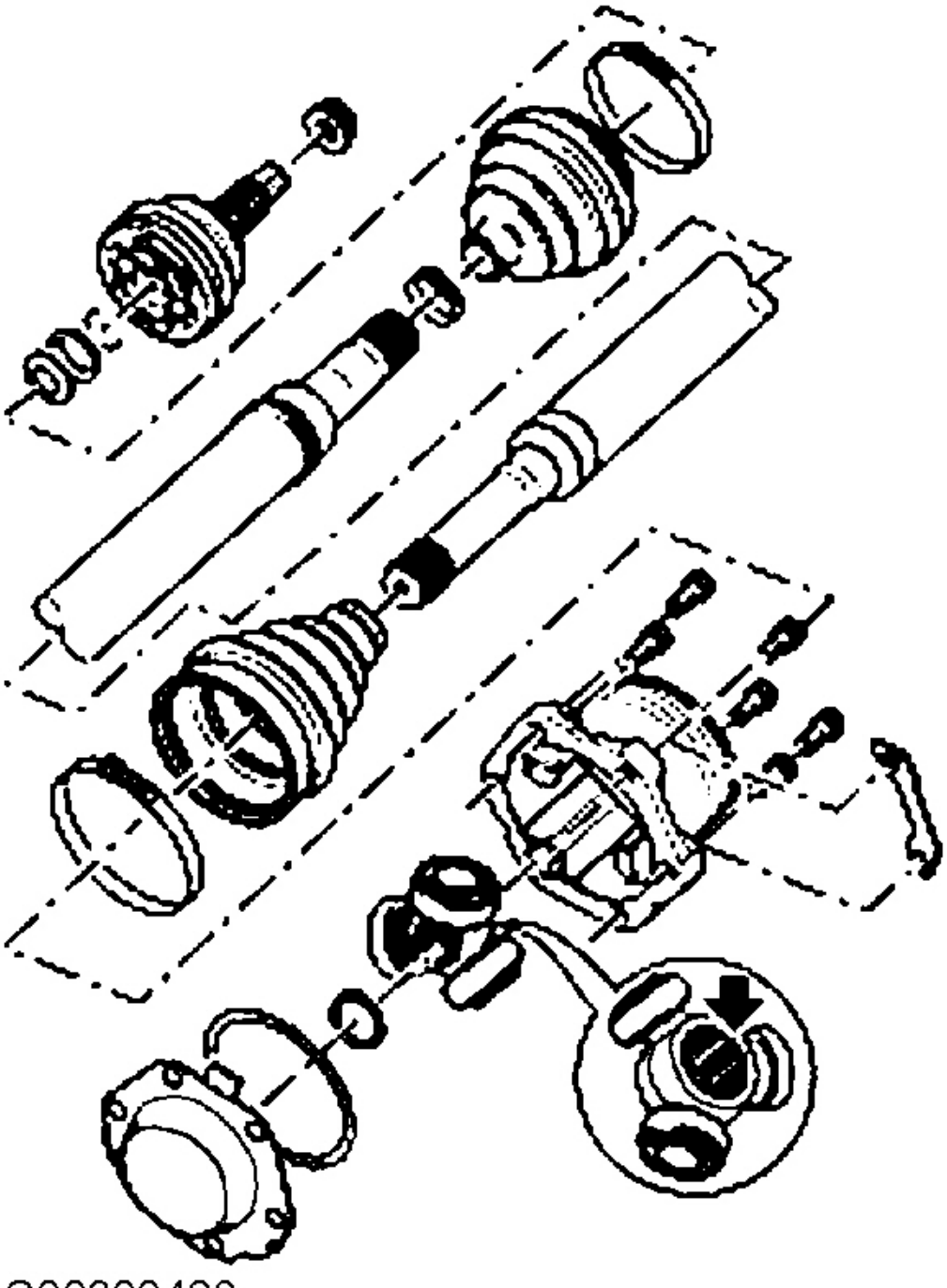


Fig. 2: Exploded View Of Front Axle Shaft & CV Joints (W/ Triple Roller Joint - AAR 2000)

Courtesy of VOLVO CARS OF NORTH AMERICA.

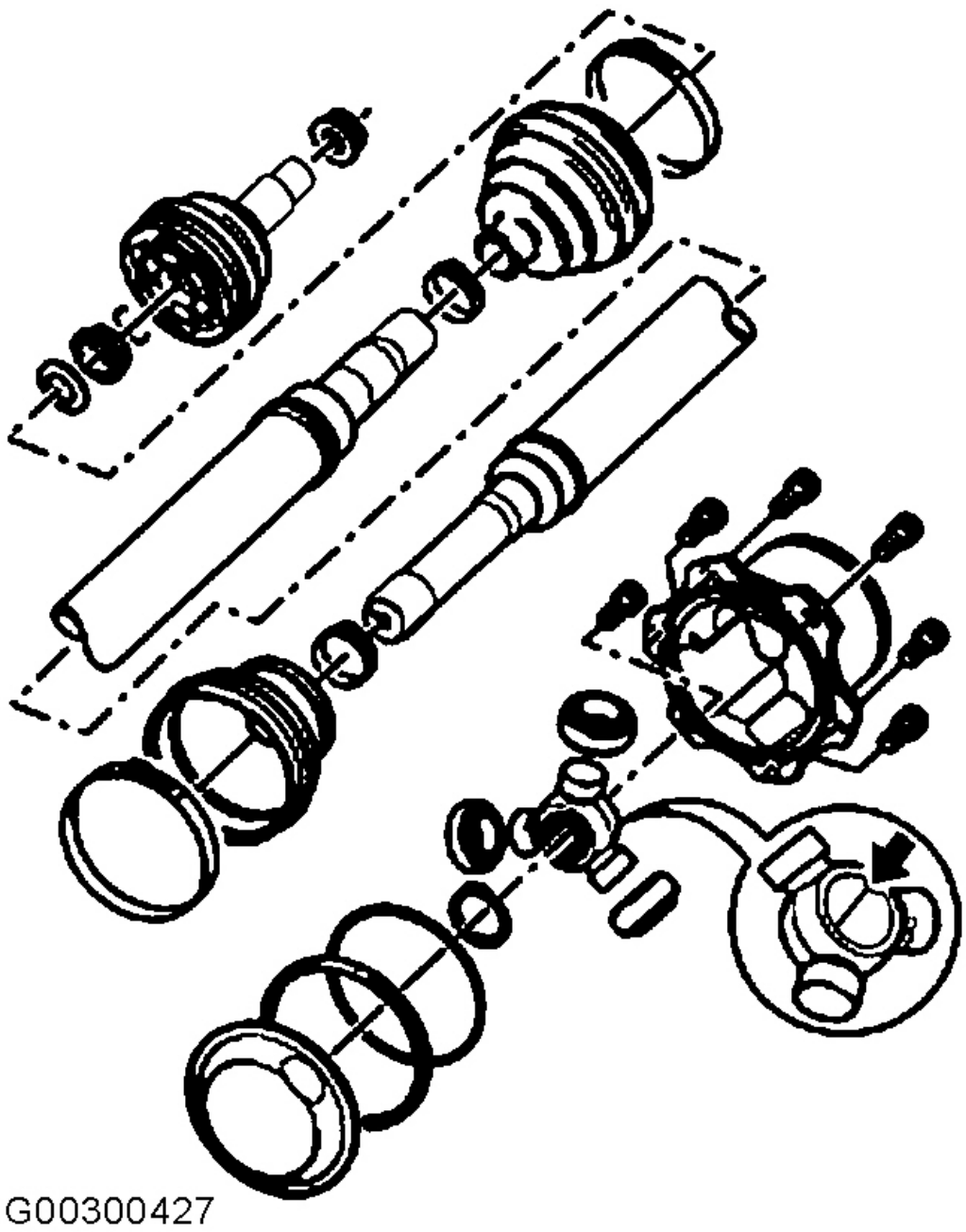


Fig. 3: Exploded View Of Front Axle Shaft & CV Joints (W/ Triple Roller Joint - AAR 2900)
Courtesy of VOLVO CARS OF NORTH AMERICA.

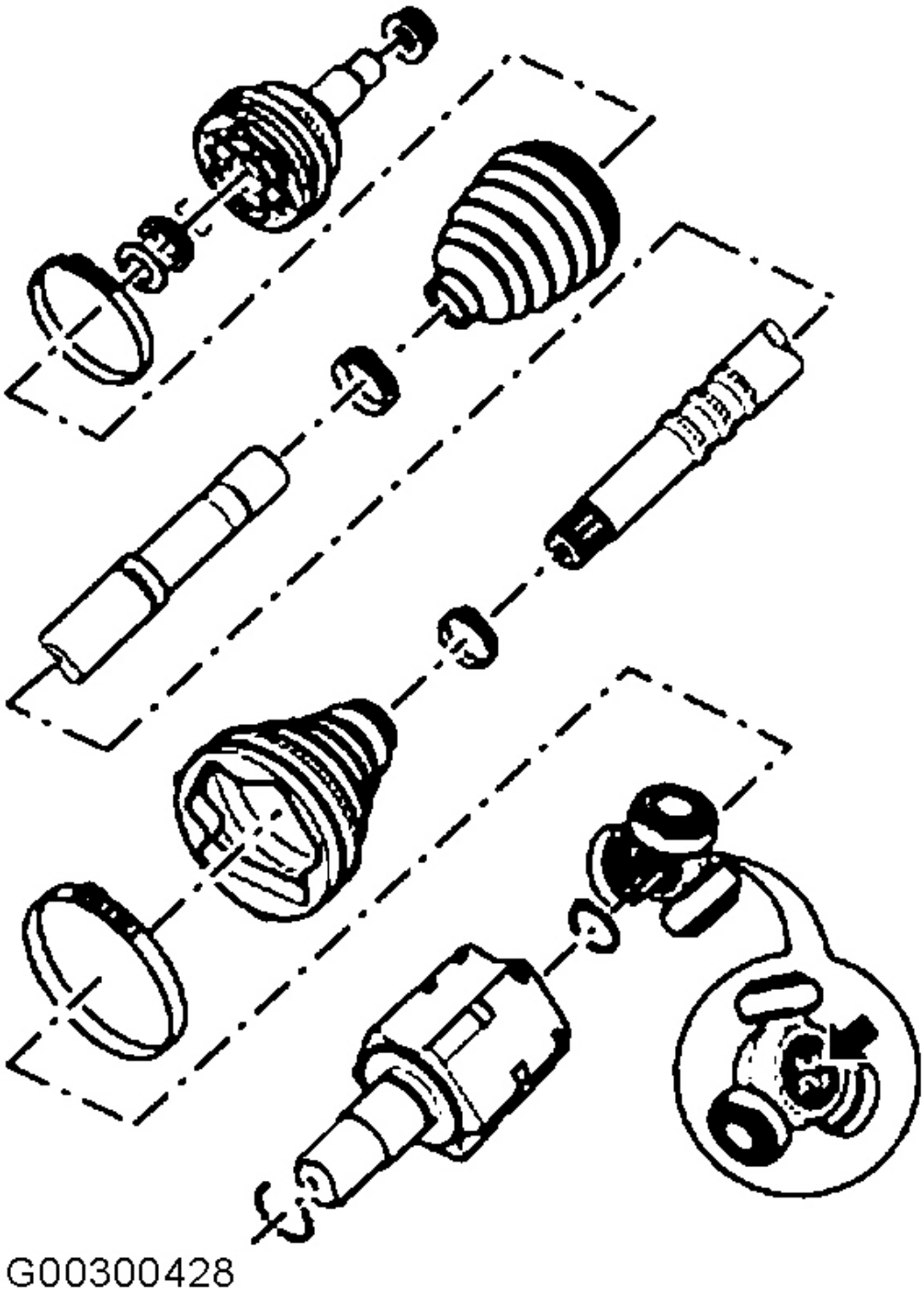
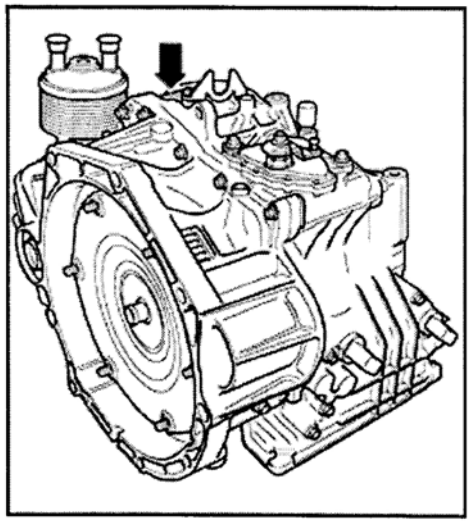


Fig. 4: Exploded View Of Front Axle Shaft & CV Joints (W/Triple Roller Joint - AAR 3300 i)

Courtesy of VOLKSWAGEN UNITED STATES, INC.

09G 6-SPEED AUTOMATIC TRANSMISSION

To identify transmission, see **Fig. 5** and **Fig. 6** .



G00307969

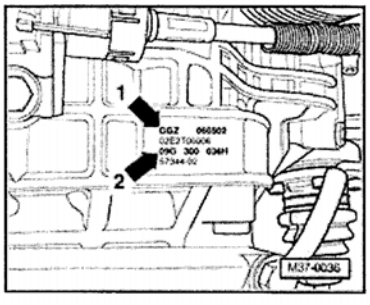
Transmission identification

The 6-speed automatic transmission 09G is installed in the New Beetle from 1998 in conjunction with a 4 cylinder engine.

Location on transmission

- Code letters (arrow)

Fig. 5: Identifying Transmission (1 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.



G00307970

- Code letters (arrow -1-)

Example:

GGZ	08	05	02
I	I	I	I
Code letters	Day	Month	Year (2002) of manufacture

The transmission code letters are also printed on the vehicle data plate:

6-speed automatic transmission 09G (arrow -2-)

Fig. 6: Identifying Transmission (2 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

LUBRICATION

CONSTANT VELOCITY JOINT LUBRICATION

Application	Grease: Total Quantity - Oz. (G)	Amount In Joint - Oz. (G)	Amount In CV Boot - Oz. (G)
Outer Joint			
81 Mm Diameter	2.8 (80)	1.4 (40)	1.4 (40)
90 Mm Diameter	4.2 (120)	2.8 (80)	1.4 (40)
Inner Joint			
94 Mm Diameter	3.2 (90)	1.4 (40)	1.8 (50)
100 Mm Diameter	4.2 (120)	1.8 (50)	2.5 (70)

TRIPLE ROLLER JOINT (AAR 2000)

Application	Grease: Total Quantity - Oz. (G)	Amount In Joints - Oz. (G)	Amount In CV Boot - Oz. (G)
Outer Joint			
90 Mm Diameter	3.53 (100)	1.76 (50)	1.76 (50)
Inner Joint			
100 Mm Diameter	3.88 (110)	1.94 (55)	1.94 (55)
108 Mm Diameter	3.88 (110)	1.94 (55)	1.94 (55)

TRIPLE ROLLER JOINT (AAR 2900)

Application	Grease: Total Quantity - Oz. (G)	Amount In Joints - Oz. (G)	Amount In CV Boot - Oz. (G)
Outer Joint			
90 Mm	3.53 (100)	1.76 (50)	1.76 (50)
Inner Joint			
124 Mm	4.94 (140)	2.47 (70)	2.47 (70)

TRIPLE ROLLER JOINT (AAR 3300 i)

Application	Grease: Total Quantity - Oz. (G)	Amount In Joints - Oz. (G)	Amount In CV Boot - Oz. (G)
Outer Joint			
98 Mm	4.23 (120)	2.82 (80)	1.41 (40)
Inner Joint			
123 Mm	4.59 (130)	2.47 (70)	2.12 (60)

REMOVAL & INSTALLATION

FRONT AXLE SHAFT

NOTE: The AAR 3300i axle shaft is used with the 09 G 6-speed automatic transmission. To identify this transmission, see 09G 6-SPEED AUTOMATIC TRANSMISSION under IDENTIFICATION.

Removal (All Except AAR 3300i, W/ 09G 6-Speed Auto. Trans.)

CAUTION: Wheel bearings must not be loaded when wheel hub 12-point nuts are loose. If wheel bearings are loaded by vehicle's own weight, bearings will be stressed and their service life reduced.

CAUTION: If vehicle has to be moved after removing axle shaft, install outer CV joint and tighten to 37 ft. lbs. (50 N.m) or else wheel bearing will be damaged.

1. Lift vehicle until load on front axle is relieved. Loosen wheel hub 12-point nut. Raise and support vehicle. Remove wheels. Remove noise insulation panel. See **Fig. 7** .

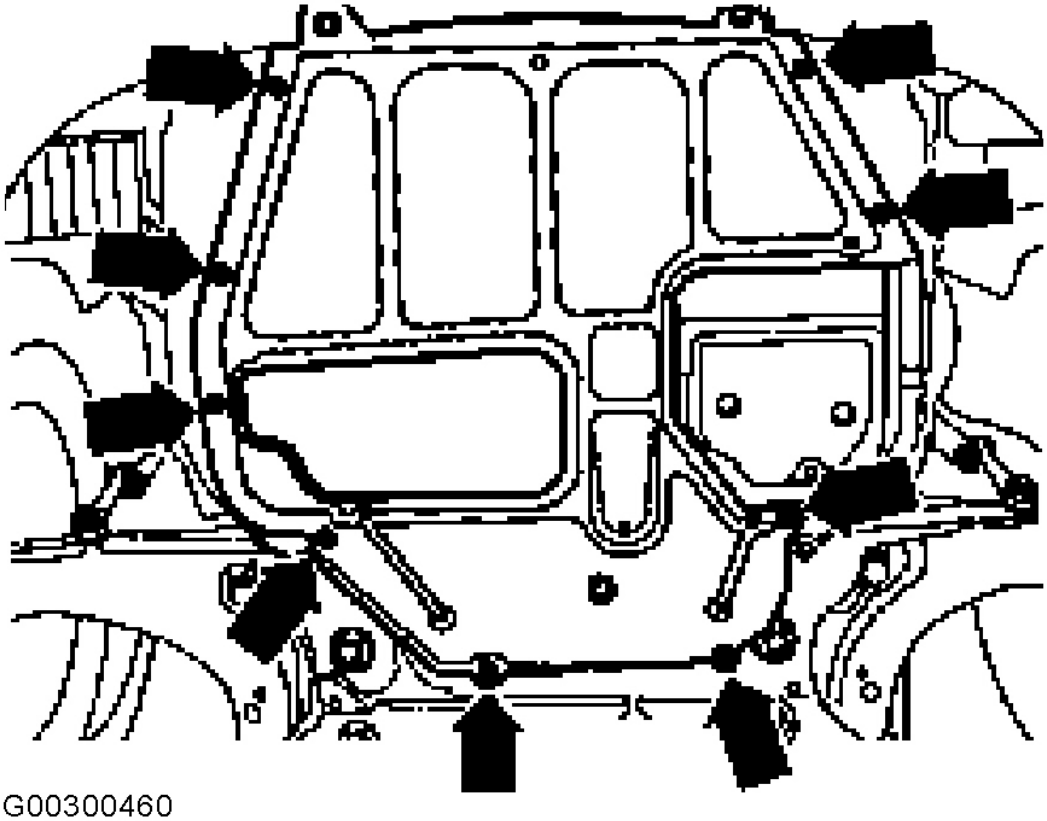


Fig. 7: Locating Noise Insulation Panel Bolts (1.9L TDI)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

2. On 1.8L (turbo) and 2.0L engines, remove left side noise insulation panel. See **Fig. 8** . Remove center, left and right insulation panels. See **Fig. 9** Remove intake air duct between charge air cooler and turbocharger.

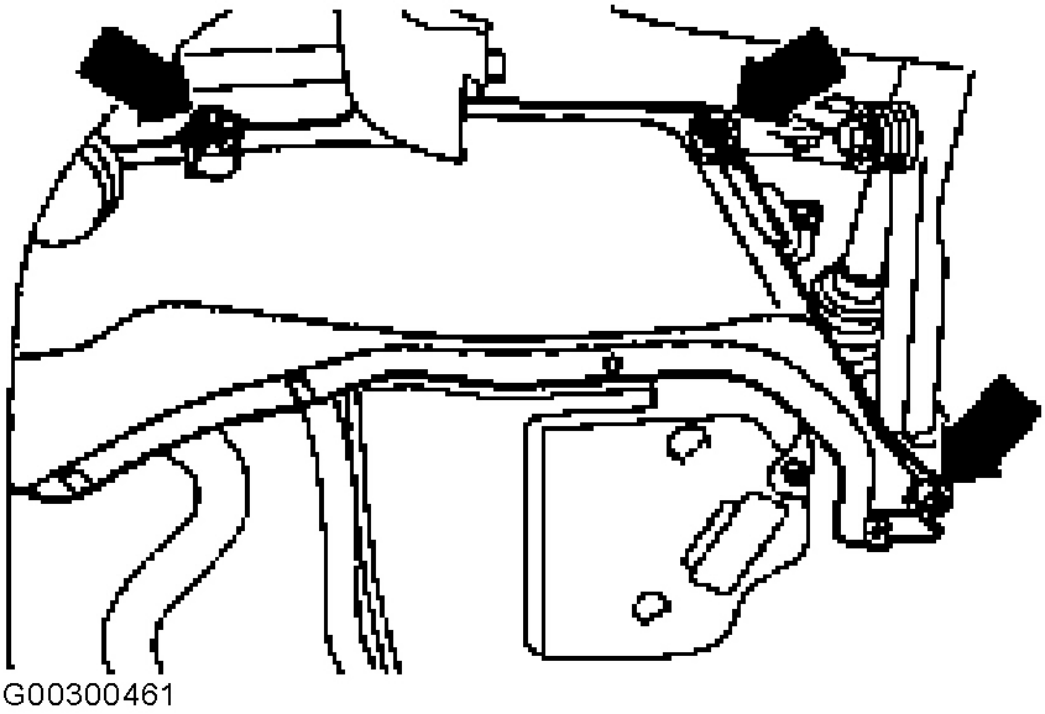


Fig. 8: Locating Noise Insulation Bolts (1.8L Turbo & 2.0L - Left Side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

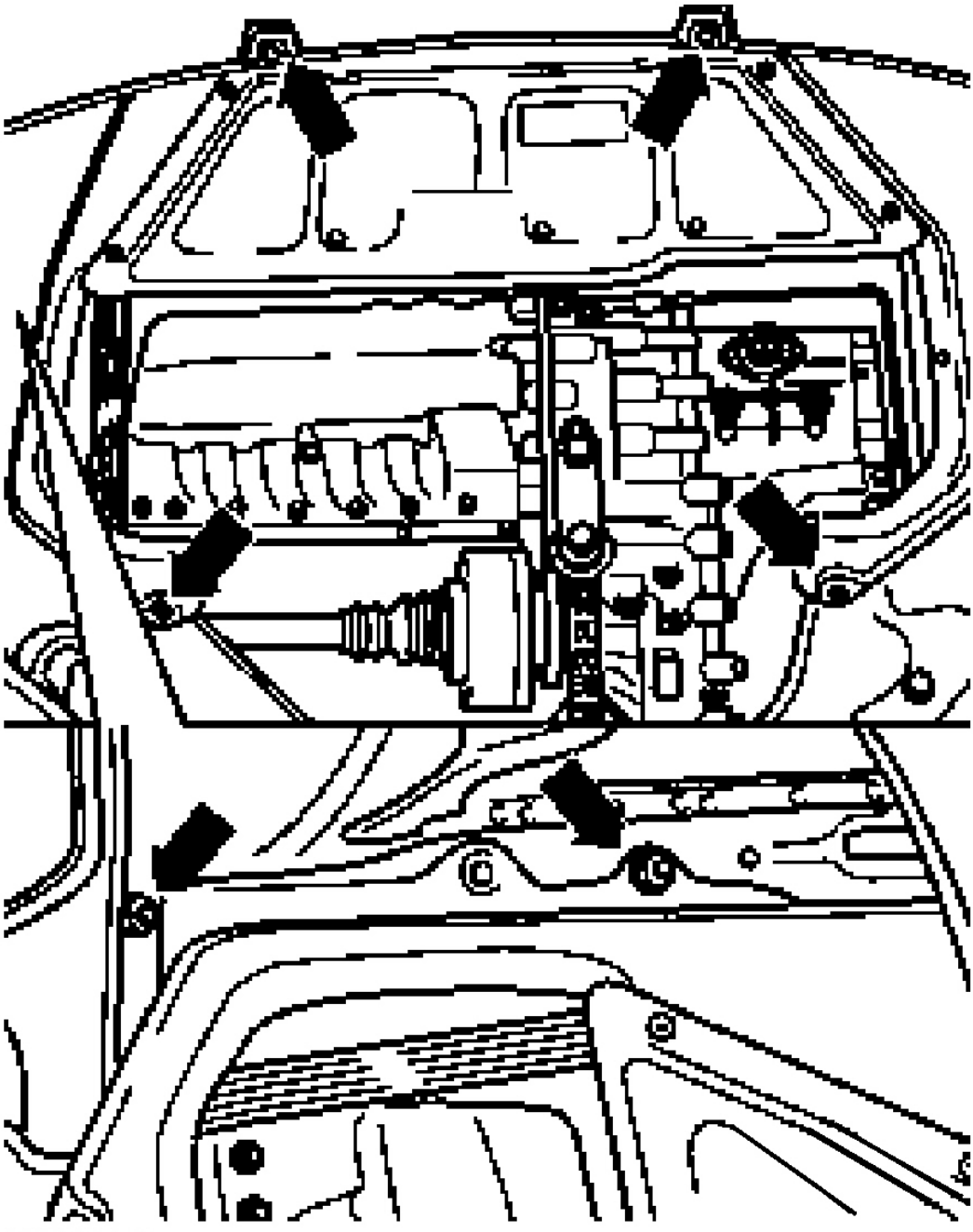


Fig. 9: Locating Noise Insulation Panel Bolts (1.8L Turbo & 2.0L)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

3. On all models, remove right-side noise insulation, if installed. Disconnect axle shaft from transmission drive flange. Mark installation position of ball joint bolts to control arm. Remove bolts.

4.

CAUTION: DO NOT allow axle shaft to hang by inner CV or triple-rotor joint to avoid damaging bearing surfaces. Tie axle shaft to stabilizer bar or other suspension compnent if it is to remain attached to axle flange. DO NOT flex inner CV or triple-rotor joint more than 25 degrees from its original angle.

Press out axle shaft. Ensure sufficient clearance is available when pressing axle shaft out. See **Fig. 10** . Remove axle shaft.

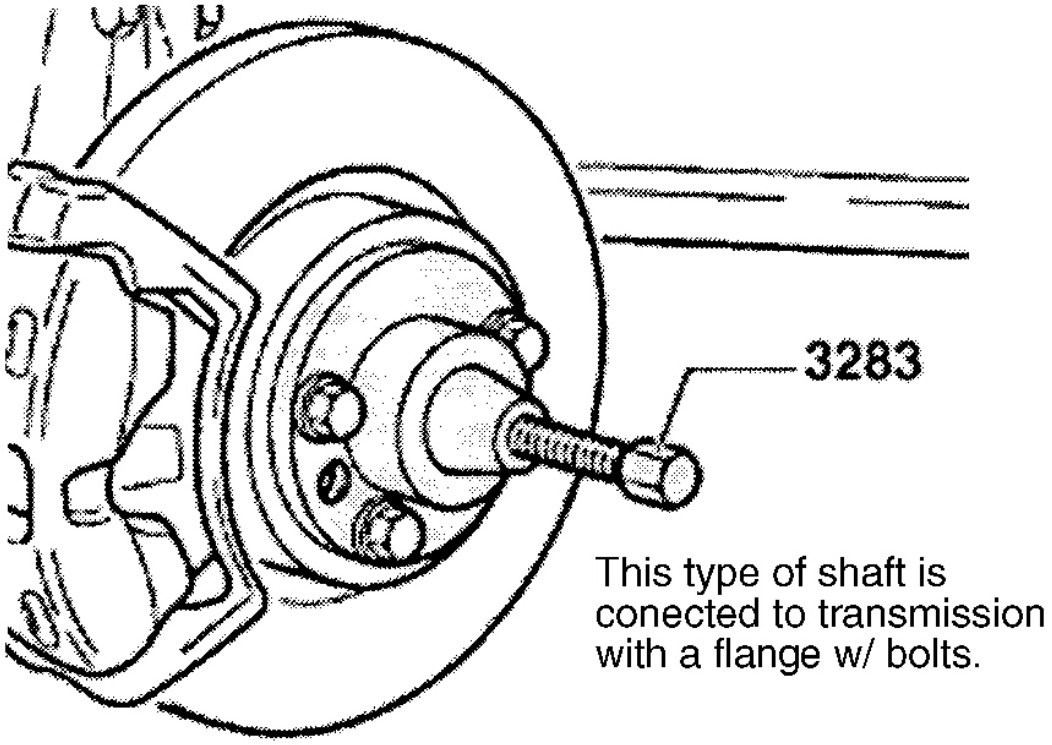


Fig. 10: Pressing Out Axle Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

5. On vehicles with automatic transmission, remove bolts (arrows). See **Fig. 11** . Using a lever or similar, push engine and transmission assembly forward. See **Fig. 12** . Remove triple roller joint axle shaft.

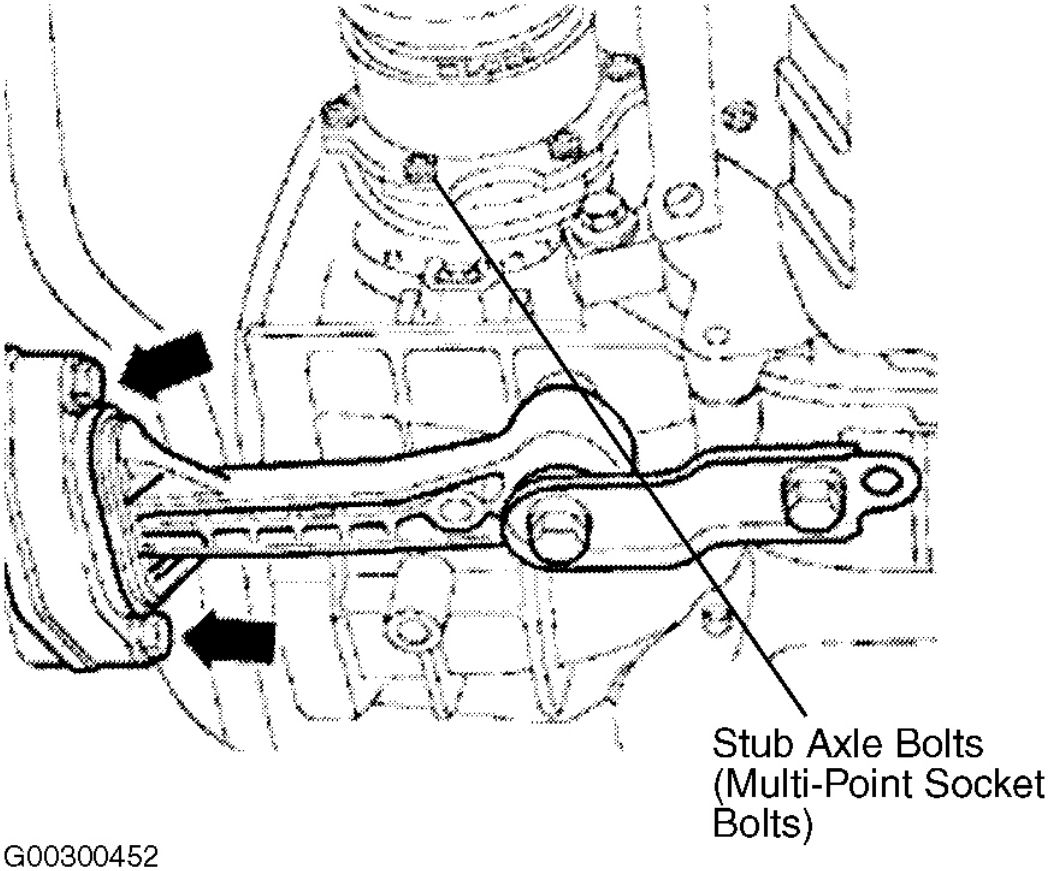


Fig. 11: Locating Pendulum Support & Stub Axle Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

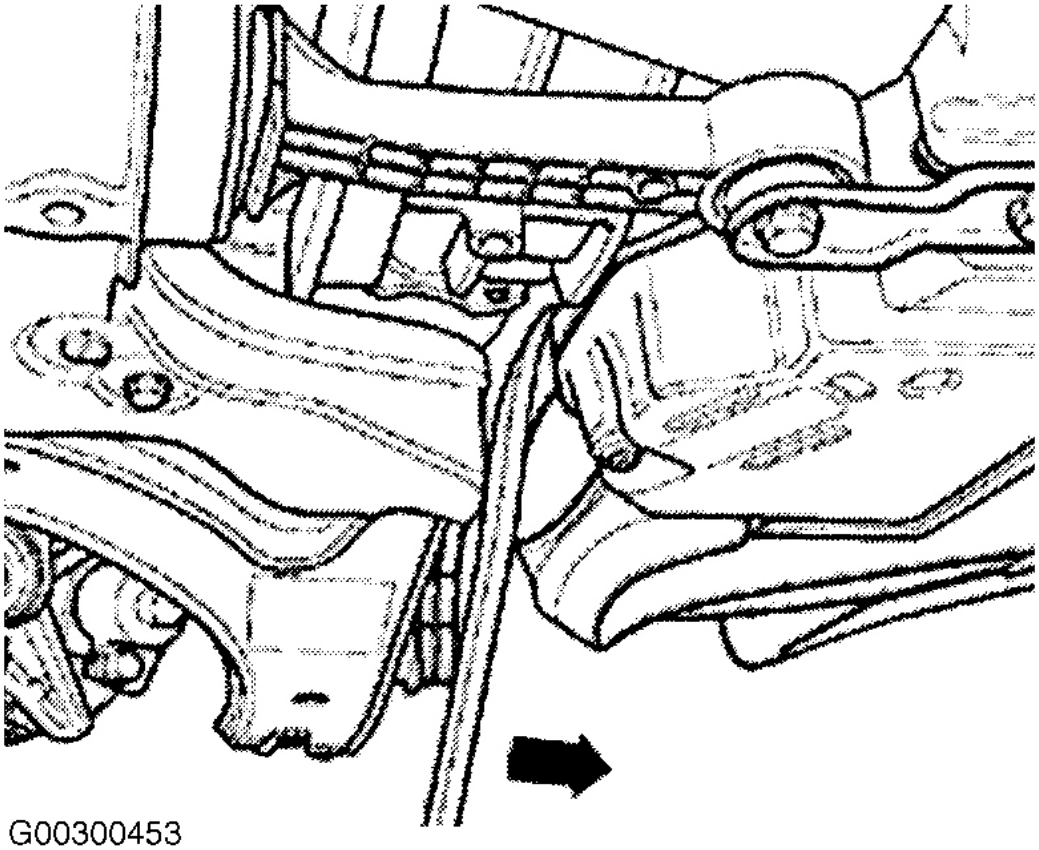


Fig. 12: Pushing Engine/Transmission Assembly W/ Pry Bar
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installation (All Except AAR 3300i, W/ 09G 6-Speed Auto. Trans.)

1. Remove any paint residue and corrosion on threads and splines of outer joint. Lubricate splines and threads of outer joint. Lubricate splines on hub. Lubricate contact surface and thread of wheel hub 12-point nut. Insert NEW circlip on splines of inner joint.
2. Guiding outer joint, into wheel hub splines as far as possible, insert axle shaft. Connect outer joint into wheel hub splines as far as possible. Using NEW bolts, connect ball joint to control arm. Tighten to specification. See **TORQUE SPECIFICATIONS** .
3. Pull outer joint in wheel hub, until outer joint comes in position inside wheel bearing. Insert inner joint to axle shaft, and tighten bolts diagonal with 88 INCH lbs. (10 N.m). Tighten multi-point socket head bolts diagonally to specification. See **TORQUE SPECIFICATIONS** .
4. **NOTE: If an angle measuring wrench is not available, go to step 5 .**

Using an Angle Measuring Wrench (VAG 1756), install wheel hub 12-point nut. See **Fig. 13** . Tighten to specification. See **TORQUE SPECIFICATIONS** .

5. If an angle measuring wrench is not available, lower vehicle until wheels touch ground. Tighten wheel hub 12-point nut to 148 ft. lbs. (200 N.m). Loosen one and one-half turns, then tighten to 37 ft. lbs. (50 N.m). Make a scribe mark on wheel hub 12-point nut (arrow A). See **Fig. 14** . Make a second mark (arrow B) on edge of wheel hub. Turn wheel hub 12-point nut further until both lines align.

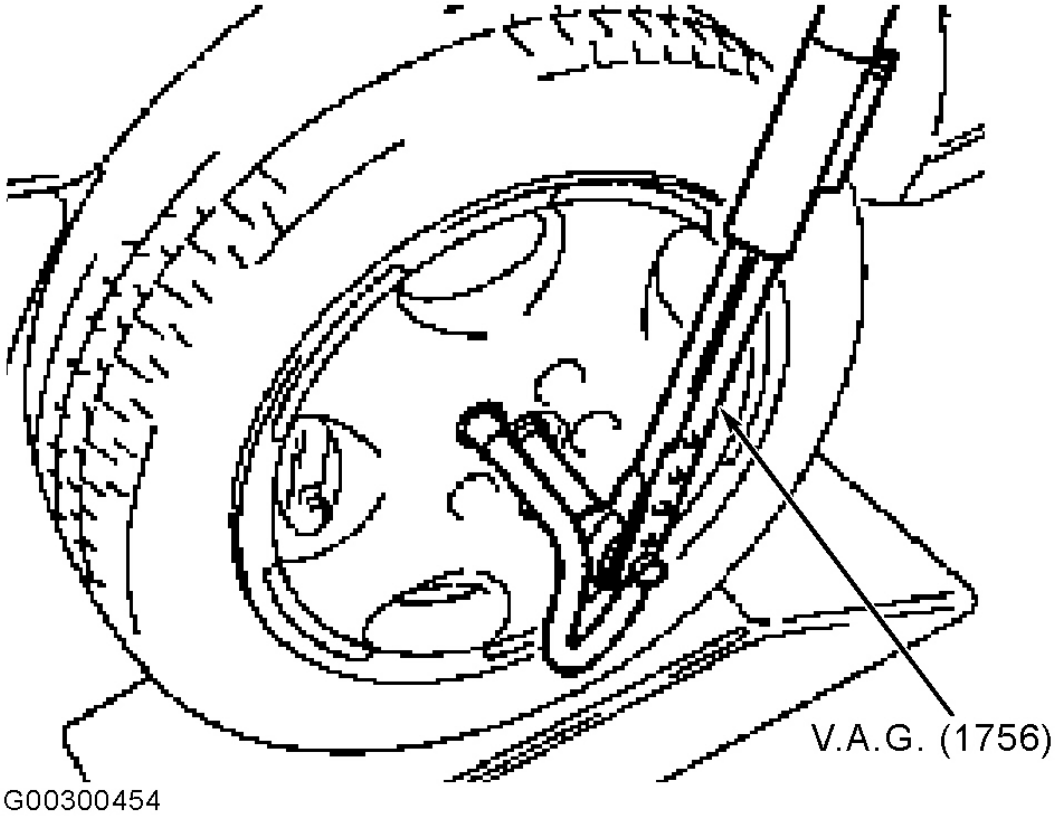


Fig. 13: Identifying Angle Measuring Wrench (VAG 1756)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

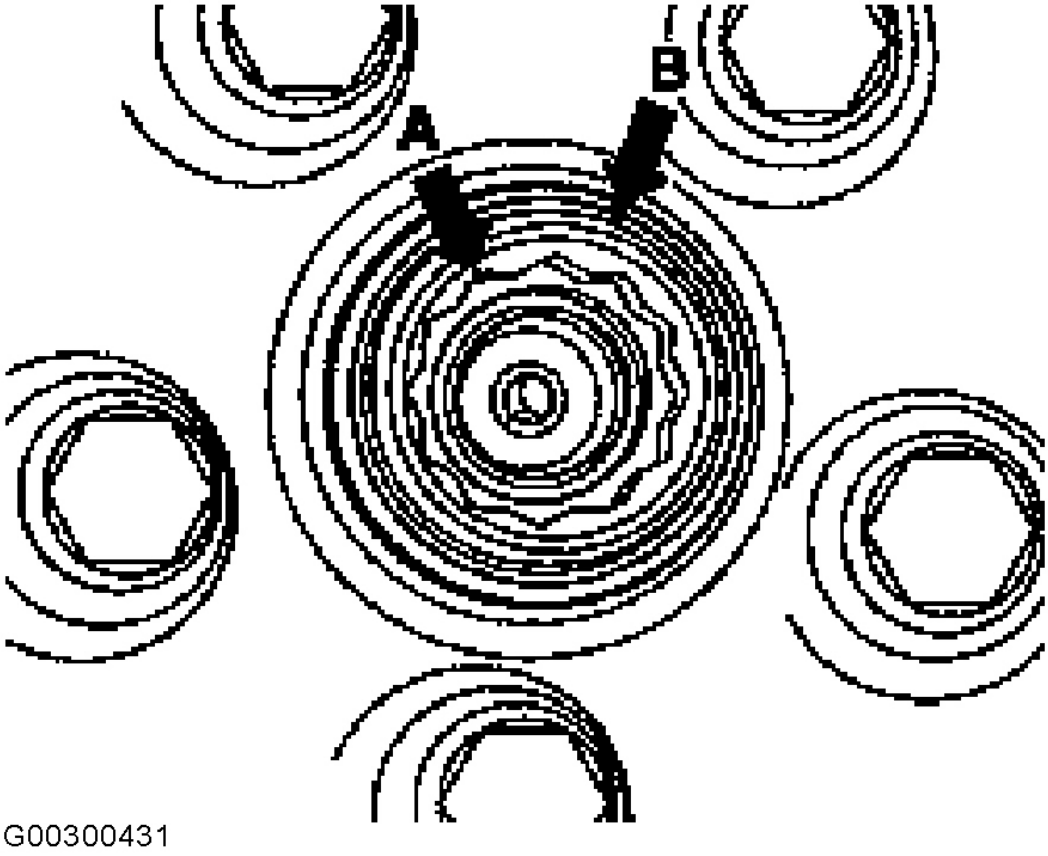


Fig. 14: Locating Wheel Hub 12-point Nut Marking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Removal (AAR 3300i, W/ 09G 6-Speed Auto. Trans.)

CAUTION: Wheel bearings must not be loaded when wheel hub 12-point nuts are loose. If wheel bearings are loaded by vehicle's own weight, bearings will be stressed and their service life reduced.

CAUTION: If vehicle has to be moved after removing axle shaft, install outer CV joint and tighten to 37 ft. lbs. (50 N.m), or else wheel bearing will be damaged.

1. Lift vehicle until load on front axle is relieved. Loosen wheel hub 12-point nut. Raise and support vehicle. Remove wheels. Remove noise insulation panel. See **Fig. 7** .
2. Mark installation position of ball joint bolts to control arm. Remove bolts. See **Fig. 15** .
3.

CAUTION: DO NOT allow axle shaft to hang down. Inner joint may be damaged through over-flexing.

NOTE: Ensure sufficient clearance when removing axle shaft.

Using wedge (T10161), press axle shaft out from transmission. See **Fig. 16** . Remove axle shaft.

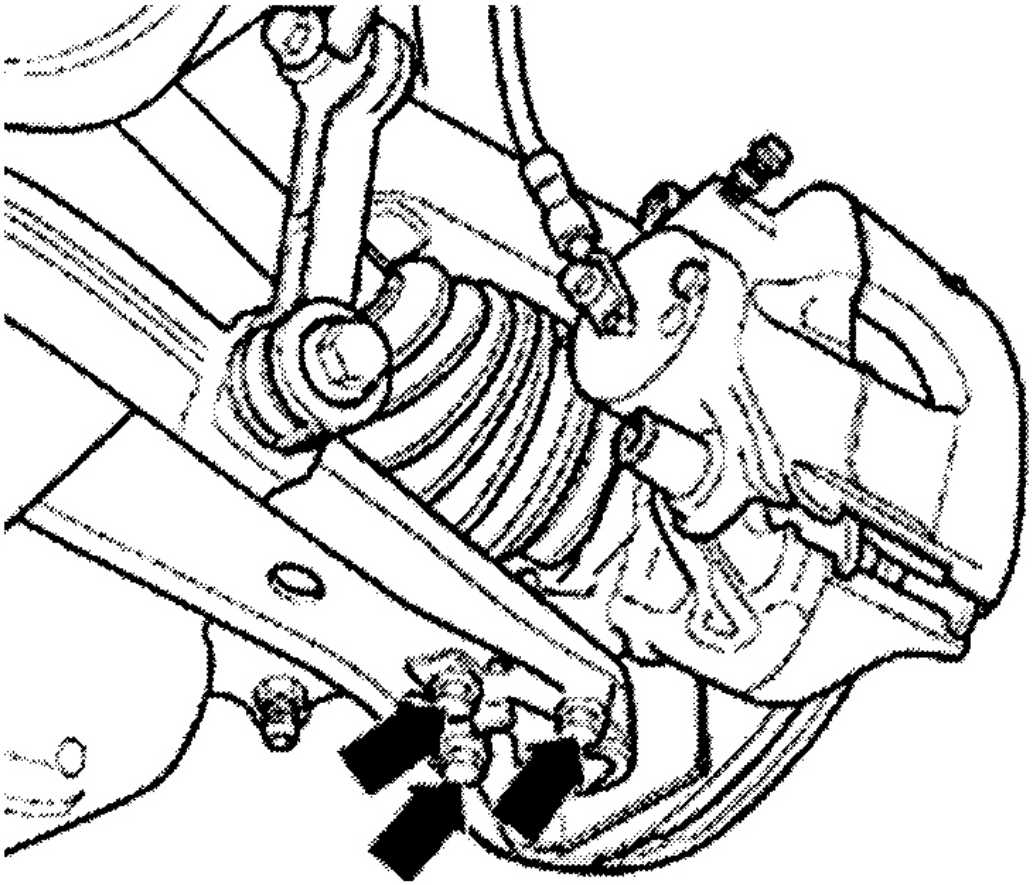


Fig. 15: Locating Ball Joint-To-Control Arm Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

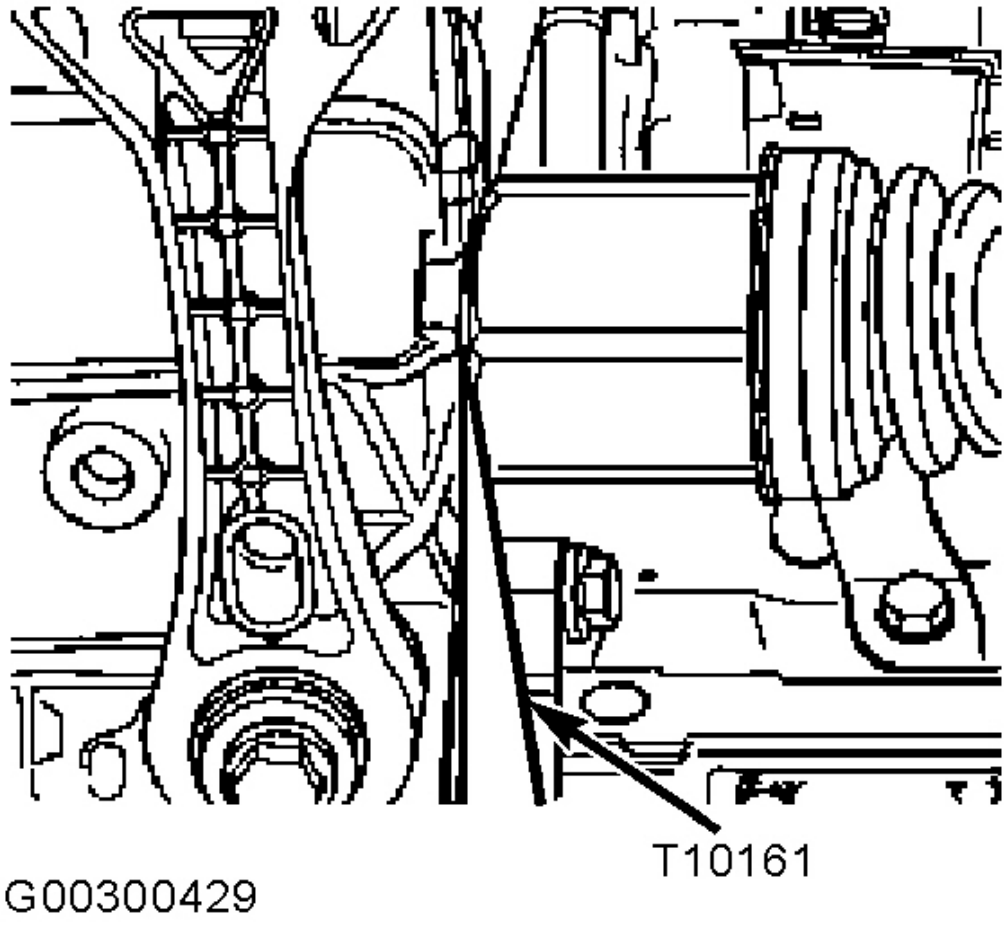


Fig. 16: Locating Wedge (T10161) To Remove Axle Shaft From Transmission
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installation (AAR 3300i, W/ 09G 6-Speed Auto. Trans.)

1. Remove any paint residue and corrosion on threads and splines of outer joint. Lubricate splines and threads of outer joint. Lubricate splines on hub. Lubricate contact surface and thread of wheel hub 12-point nut. Insert NEW circlip on splines of inner joint.
2. Guiding outer joint, into wheel hub splines as far as possible, insert axle shaft.
3. Pull outer joint in wheel hub, until outer joint comes in position inside wheel bearing. Insert joint housing of axle shaft in splines of transmission. Ensure axle shaft is secure in transmission.
4.

CAUTION: Ensure axle shaft is positioned correctly in inner joint to avoid damage of rollers from tripod star.

Pull control arm downward in direction of arrow (A). See **Fig. 17** . Press wheel bearing housing on brake caliper inward direction of arrow (B). Ensure axle shaft is secure in joint housing.

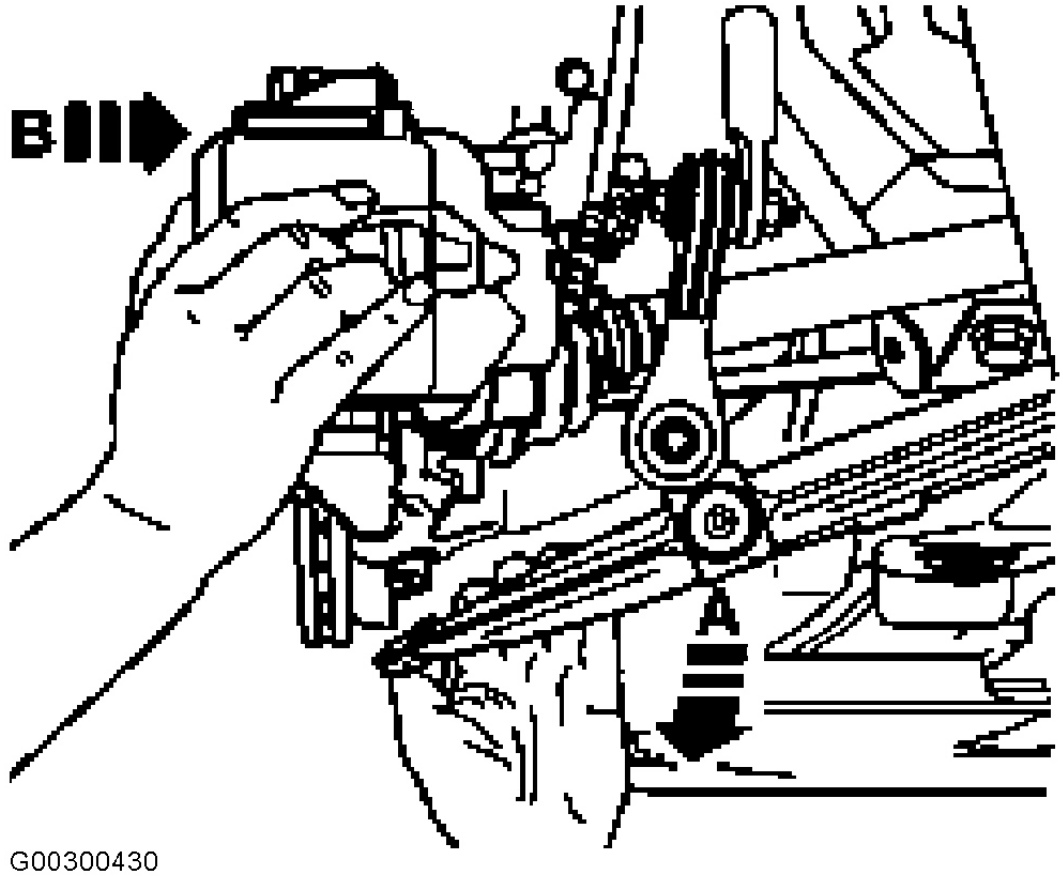


Fig. 17: Positioning Control Arm & Wheel Bearing Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

5. Press axle shaft into transmission onto stop. If axle shaft cannot be pressed into transmission by hand, lightly tap axle shaft in using rubber hammer. Joint housing is correctly installed when a maximum gap of 1 mm is between joint housing and transmission. Carefully move joint housing in and out to ensure correct placement in transmission.
6. Using NEW bolts, locate old impression marks, and install ball joint to control arm. Tighten to specification. See **TORQUE SPECIFICATIONS** .
7.

NOTE: If an angle measuring wrench is not available, go to step 8 .

Using an Angle Measuring Wrench (VAG 1756), install wheel hub 12-point nut. See **Fig. 13** . Tighten to specification. See **TORQUE SPECIFICATIONS** .

8. If an angle measuring wrench is not available, lower vehicle until wheels touch ground. Tighten wheel hub 12-point nut to 148 ft. lbs. (200 N.m). Loosen one and one-half turns, then tighten to 37 ft. lbs. (50 N.m). Make a scribe mark on wheel hub 12-point nut (arrow A). See **Fig. 14** . Make a second mark (arrow B) on edge of wheel hub. Turn wheel hub 12-point nut further until both lines align.

OVERHAUL

CONSTANT VELOCITY JOINT (OUTER)

NOTE: The six ball bearings for each joint belong to a tolerance group. Check stub axle, hub, cage and ball bearings for small indentations (pitting) and signs of seizure. Excessive backlash in joint will be noticed as a knock when changing from acceleration to deceleration or vice versa. Replace joint if necessary. Polished areas and ball track marks are not reasons for replacing joint.

Disassembly, Inspection & Reassembly

1. Remove axle shaft. See **FRONT AXLE SHAFT** under REMOVAL & INSTALLATION.
2. Remove constant velocity boot. Using an aluminum hammer, drive joint off axle shaft with a firm blow.
3. Using an electric scribe or oil stone, mark position of ball hub in relation to ball cage and housing. Swivel ball hub and ball cage in housing. See **Fig. 18** . Remove ball bearings one at a time.
4. Turn cage until two rectangular openings (arrow) are aligned with joint housing. See **Fig. 19** . Lift out cage together with hub.
5. Swing segment of hub into rectangular opening of cage and tilt out of cage. See **Fig. 20** . Clean all components thoroughly, ensuring all components are free of grease and dirt.
6. Press specified amount of grease into joint body. See **CONSTANT VELOCITY JOINT LUBRICATION** table under LUBRICATION. Install cage with hub in joint housing. Press in balls separately from alternate sides, ensuring that original alignment of hub to cage and joint housing is restored. Distribute specified amount of grease in constant velocity joint boot.
7. Install spring washer (1) and thrust washer (2) on axle shaft. See **Fig. 21** .
8. **NOTE: Ensure bevel on inner diameter of ball hub (splines) faces contact shoulder of axle shaft.**

   Press on joint up to stop. Install NEW circlip.
9. **NOTE: DO NOT damage the paint (scratch or score paint surface) by using a sharp tool.**

On left axle, using paint or adhesive tape, mark 17 mm in place of position (A). Install boot as shown. See **Fig. 22** . On right axle, ensure vent chamber is seated on tube, and install boot as shown. See **Fig. 23** .

10.

NOTE: Take care not to bend pliers when tightening hose clamp.

On both sides, place a hose clamp on larger diameter of boot. Install V.A.G. (1682) constant velocity joint boot clamp tool, so that jaws of pliers seat in corners of clamp (B). See **Fig. 24** . Using a torque wrench, tighten hose clamp by turning spindle (A). Tighten to specification. See **TORQUE SPECIFICATIONS** .

11.

NOTE: If necessary, lubricate spindle threads with MOS 2 grease. If spindle does not turn freely, clamping force on clamp will not be achieved even though correct tightening torque is indicated.

Place hose clamp on smaller diameter of boot. Use torque wrench (C) with a range of 5-40 ft. lbs. (5-50 N.m). See **Fig. 25** . Ensure spindle (A) turns freely. Tighten to specification. See **TORQUE SPECIFICATIONS** .

12. Install axle shaft. See **FRONT AXLE SHAFT** under REMOVAL & INSTALLATION.

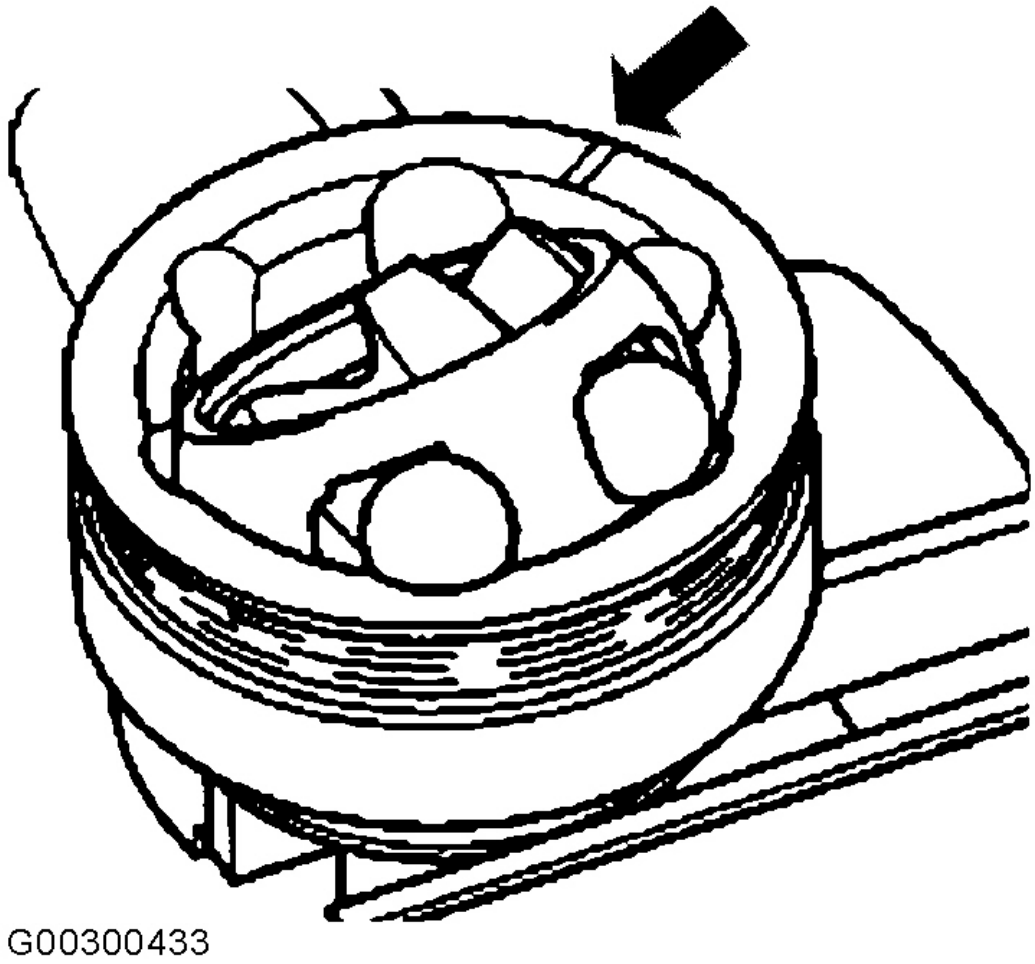


Fig. 18: Removing Ball Hub & Ball Cage
Courtesy of VOLKSWAGEN UNITED STATES, INC.

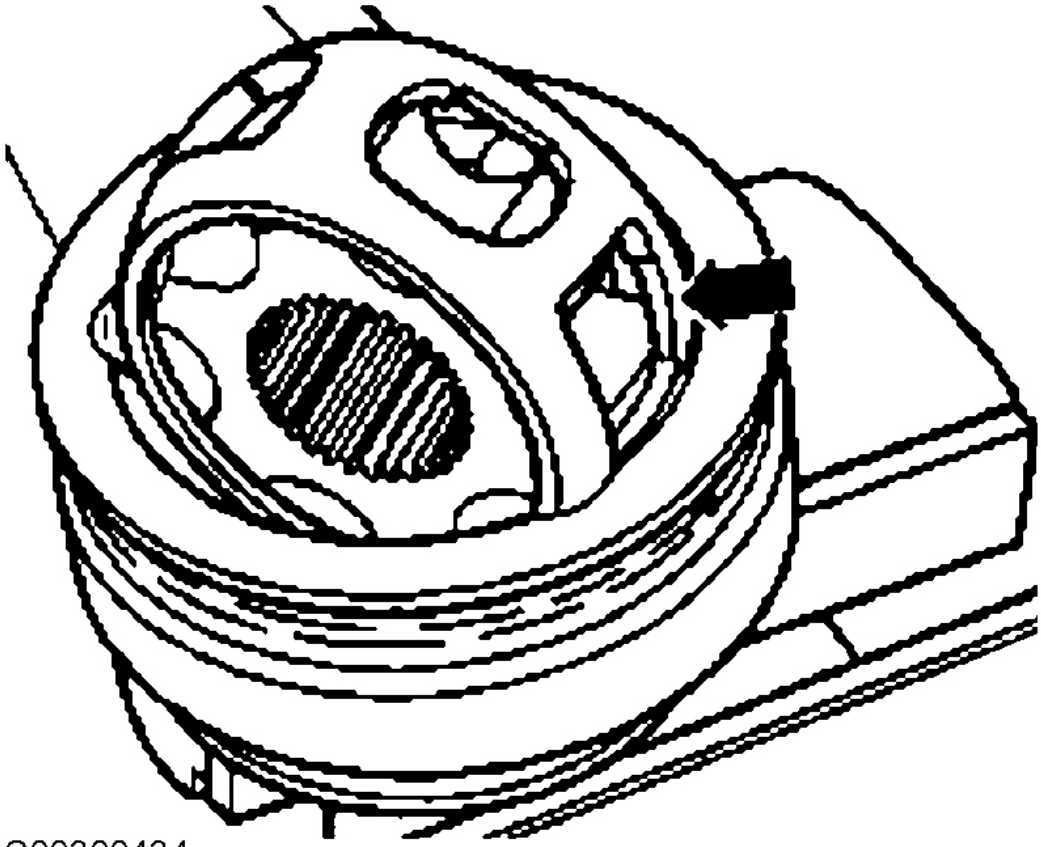


Fig. 19: Removing Ball Cage
Courtesy of VOLKSWAGEN UNITED STATES, INC.

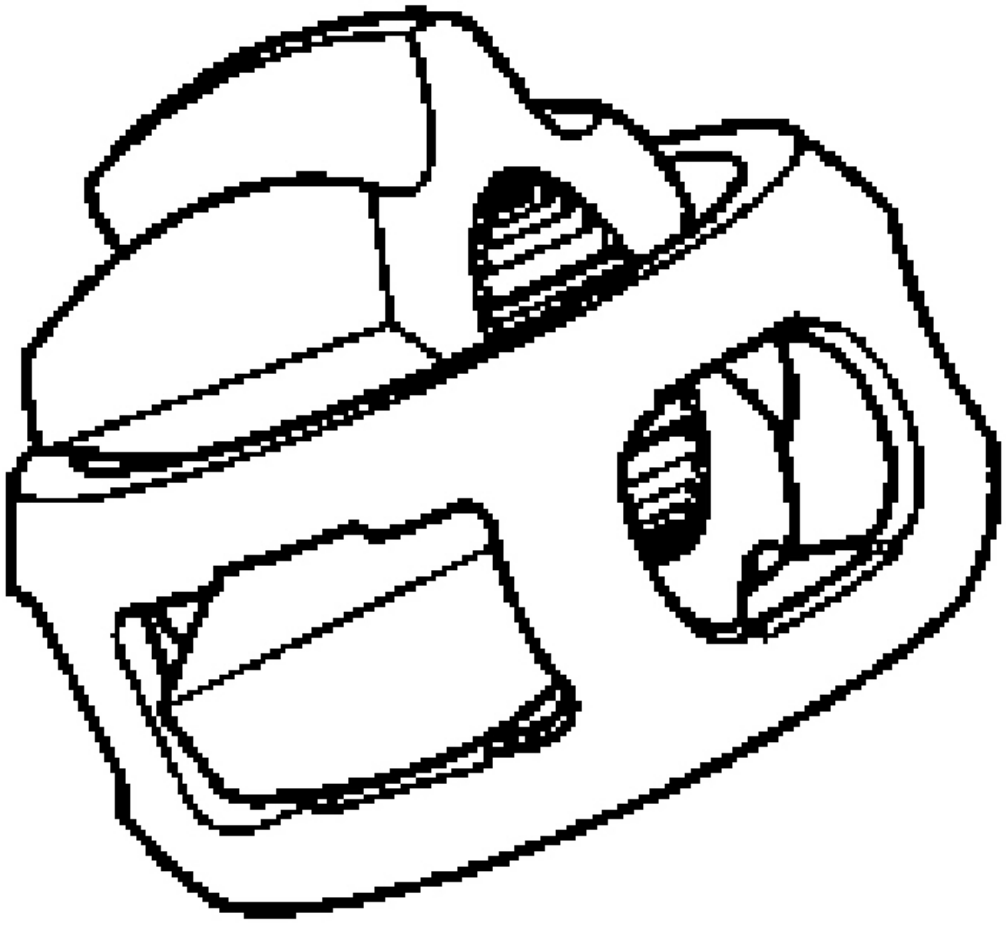


Fig. 20: Removing Ball Hub
Courtesy of VOLKSWAGEN UNITED STATES, INC.

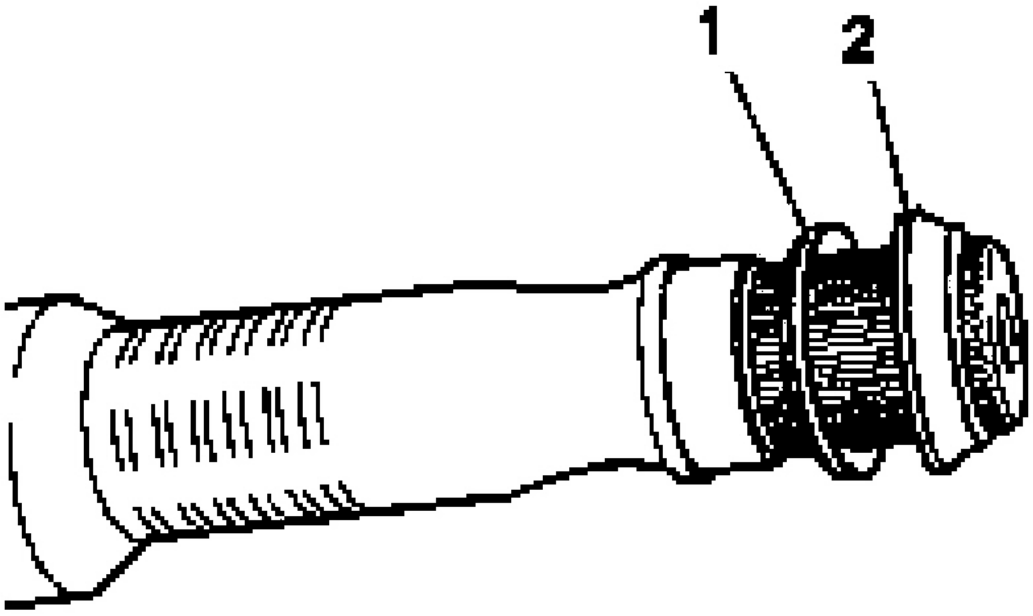


Fig. 21: Locating Spring & Thrust Washers (Outer Joint)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

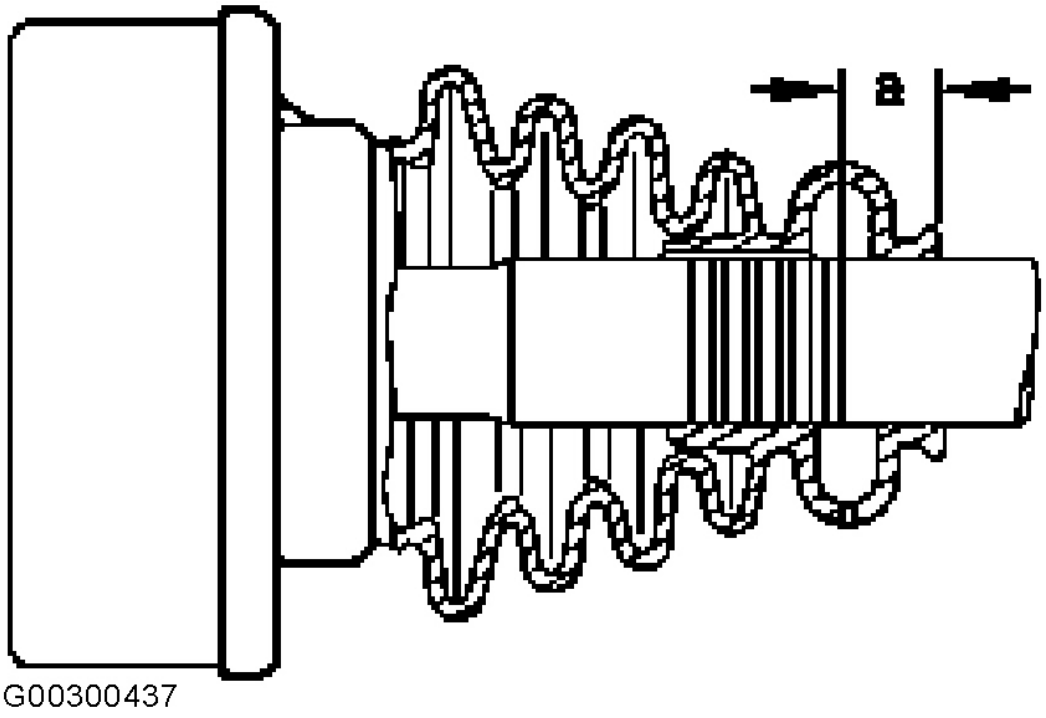


Fig. 22: Installation Position Of CV Joint Boot (Left Axle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

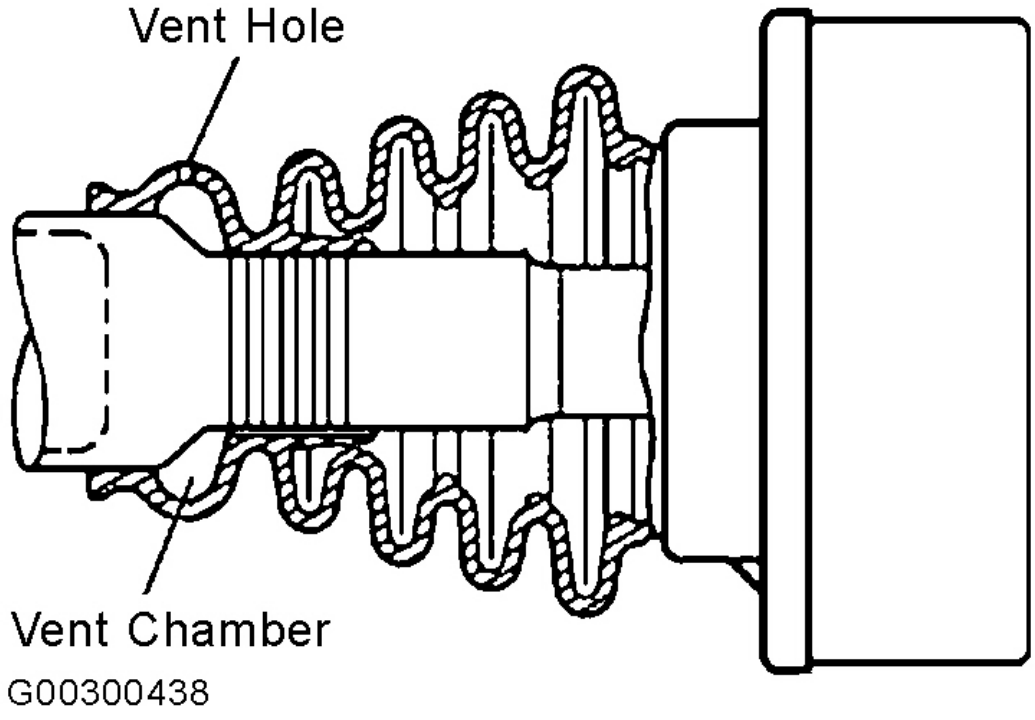


Fig. 23: Installation Position Of CV Joint Boot (Right Axle)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

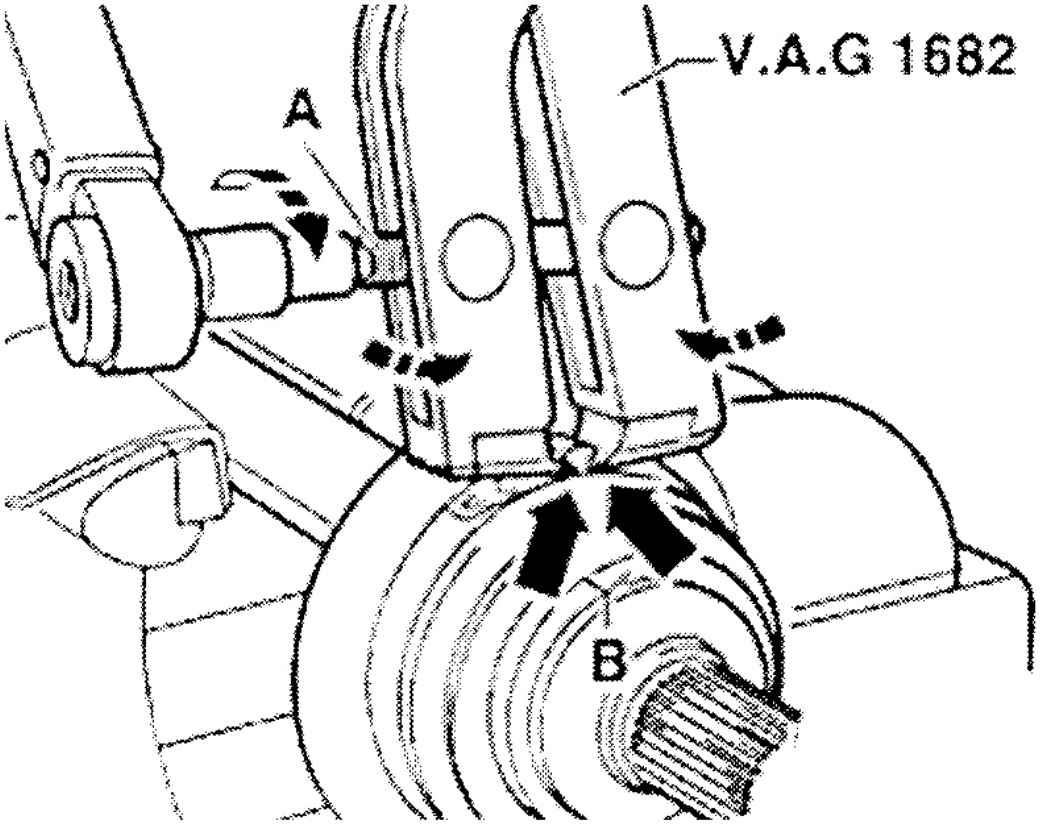


Fig. 24: Applying Tension To Large Diameter Hose Clamp
Courtesy of AUDI OF AMERICA, INC.

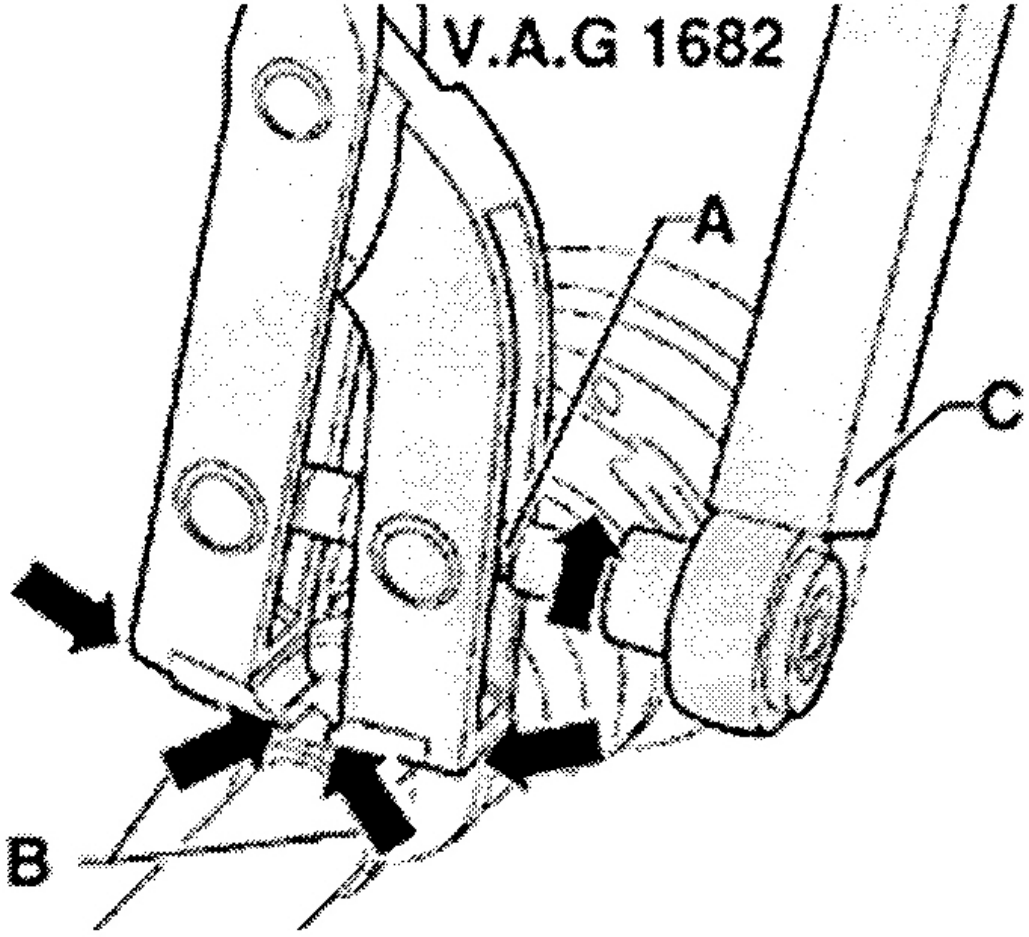


Fig. 25: Applying Tension To Smaller Diameter Hose Clamp
Courtesy of AUDI OF AMERICA, INC.

CONSTANT VELOCITY JOINT (INNER)

NOTE: Excessive backlash in joint will be noticed as a knock when changing from acceleration to deceleration or vice versa. Replace joint if necessary. Polished areas and ball track marks are not reasons for replacing joint.

Disassembly, Inspection & Reassembly

1. Remove axle shaft. See **FRONT AXLE SHAFT** under REMOVAL & INSTALLATION.
2. Using drift, remove constant velocity joint. Using special tools (T10065/1, T10065/4, VW 401, VW 402

& VW 408A) press joint off axle shaft. See **Fig. 26** .

3. **CAUTION: Ball hub and joint are paired and MUST NOT be interchanged.**

   Swivel ball hub and ball cage in housing. Press out ball cage in direction of arrow. See **Fig. 27** . Press ball bearings out of cage.

4. Tilt ball hub out of ball cage over ball track (arrows). See **Fig. 28** . Clean all components thoroughly, ensuring all components are free of grease and dirt. Check joint housing, ball hub, ball cage, and ball bearings for indentations (pitting) and signs of seizure.

5. **NOTE: Bevel on inner diameter of ball hub (splines) must face larger diameter of joint housing.**

   Install ball hub over both bevels into ball cage. Press specified amount of grease into joint body. See **CONSTANT VELOCITY JOINT LUBRICATION** table under LUBRICATION. Hub can be installed in any position. Press ball bearings into cage.

6. Install hub together with cage and balls at right angle to joint. Ensure wide spacing (A) on joint housing is aligned with narrow spacing (B) on hub after swiveling in. See **Fig. 29** .

7. **NOTE: Hub must be swiveled out of cage far enough to allow ball bearings to install into ball tracks.**

   Swivel in ball hub. Press cage firmly until hub swings fully into position. Constant velocity joint is correctly assembled when ball hub can be moved by hand backward and forward over its entire axial movement range.

8. Install spring washer (1) on axle shaft. See **Fig. 30** .

9. **NOTE: Ensure bevel on inner diameter of ball hub (splines) faces contact shoulder of axle shaft.**

   Press on joint up to stop. Install NEW circlip. Press specified amount of grease into constant velocity joint boot. See **CONSTANT VELOCITY JOINT LUBRICATION** table under LUBRICATION.

10. **NOTE: DO NOT damage the paint (scratch or score paint surface) by using a sharp tool.**

    On left axle, using paint or adhesive tape, mark 17 mm in place of position (A). Install boot as shown. See **Fig. 22** . On right axle, ensure vent chamber is seated on tube, and install boot as shown. See **Fig. 23** .

11. **NOTE: Take care not to bend pliers when tightening hose clamp.**

On both sides, place a hose clamp on larger diameter of boot. Install V.A.G. (1682) constant velocity joint boot clamp tool, so that jaws of pliers seat in corners of clamp (B). See **Fig. 24** . Using a torque wrench, tighten hose clamp by turning spindle (A). Tighten to specification. See **TORQUE SPECIFICATIONS** .

12.

NOTE: If necessary, lubricate spindle threads with MOS 2 grease. If spindle does not turn freely, clamping force on clamp will not be achieved even though correct tightening torque is indicated.

Place hose clamp on smaller diameter of boot. Use torque wrench (C) with a range of 5-40 ft. lbs. (5-50 N.m). See **Fig. 25** . Ensure spindle (A) turns freely. Tighten to specification. See **TORQUE SPECIFICATIONS** .

13. Install axle shaft. See **FRONT AXLE SHAFT** under REMOVAL & INSTALLATION.

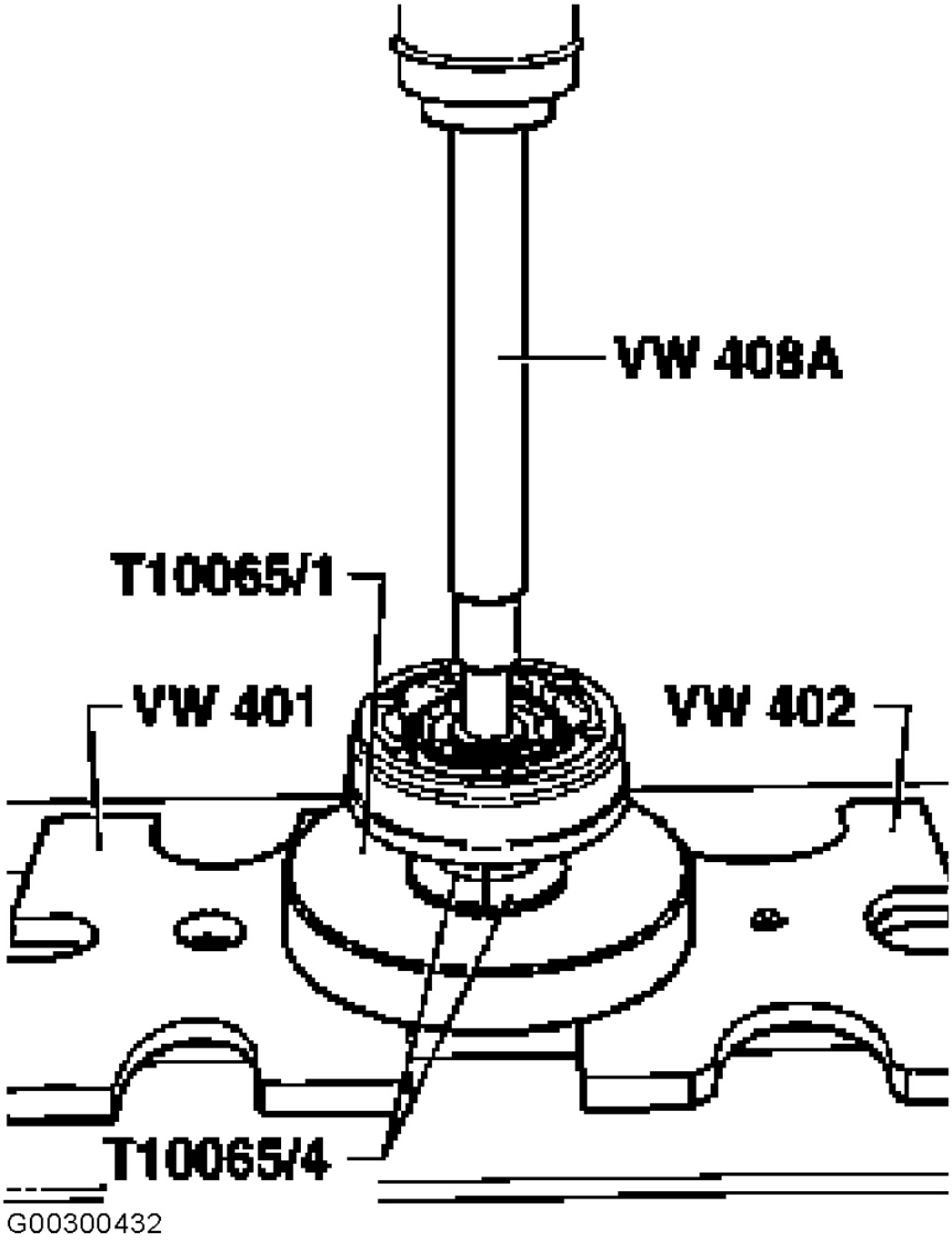


Fig. 26: Pressing Off Inner Constant Velocity Joint
Courtesy of VOLKSWAGEN UNITED STATES, INC.

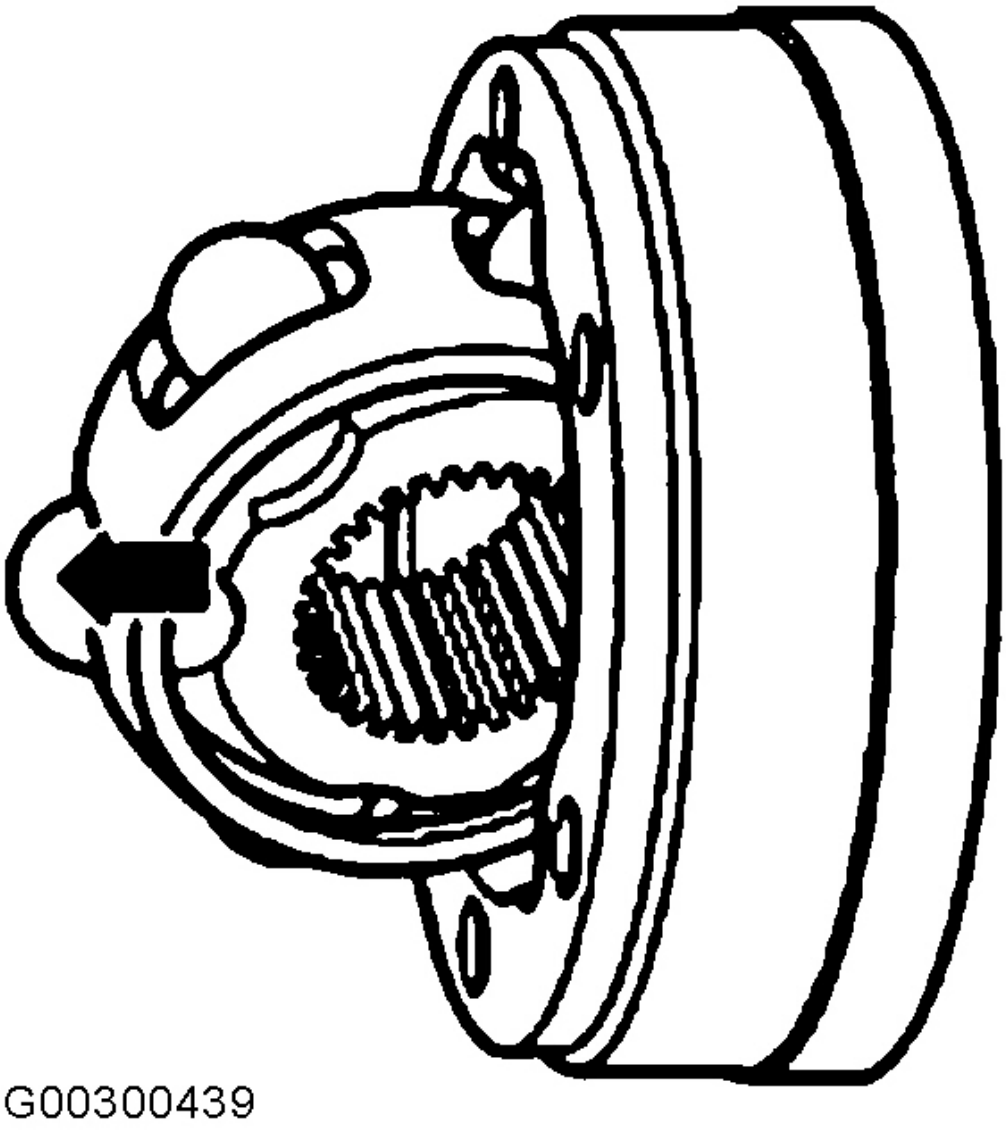


Fig. 27: Removing Ball Cage
Courtesy of VOLKSWAGEN UNITED STATES, INC.

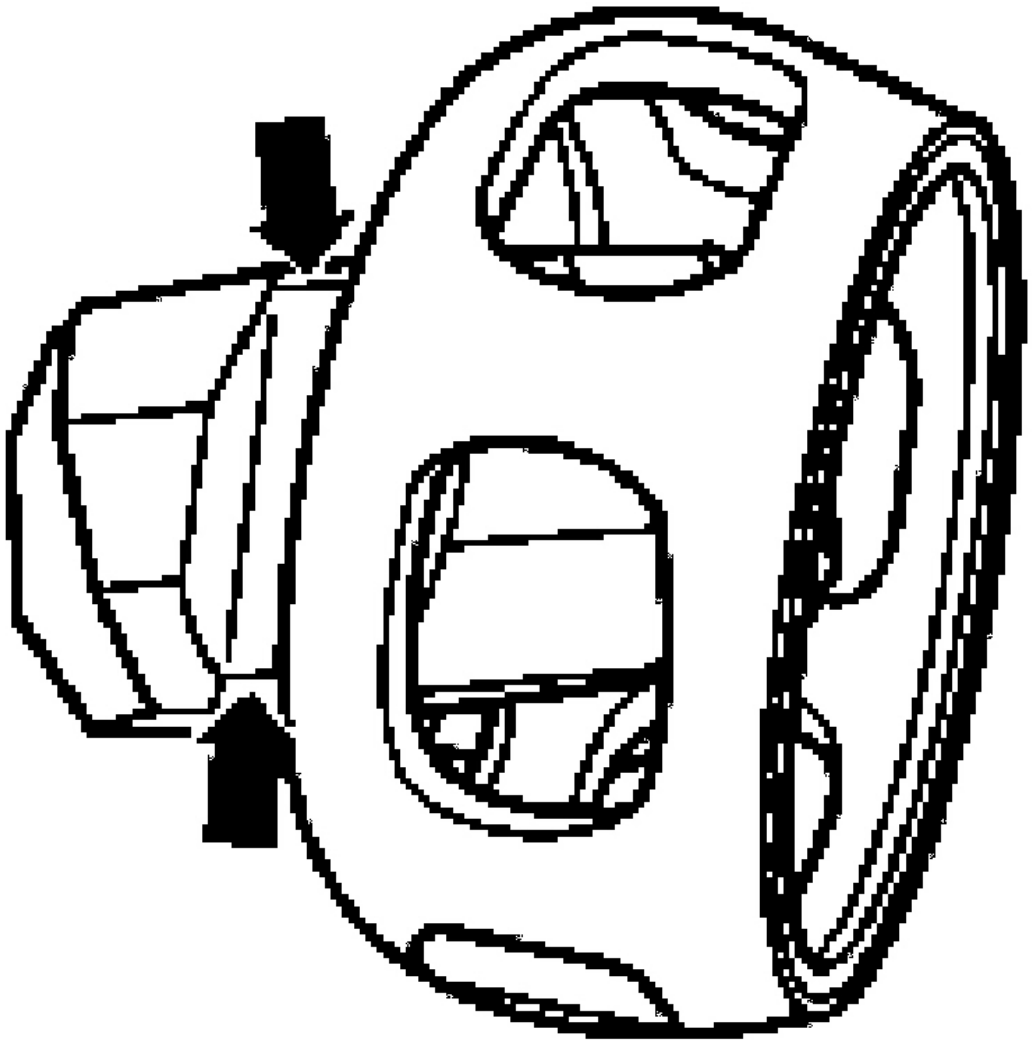


Fig. 28: Removing Ball Hub
Courtesy of VOLKSWAGEN UNITED STATES, INC.

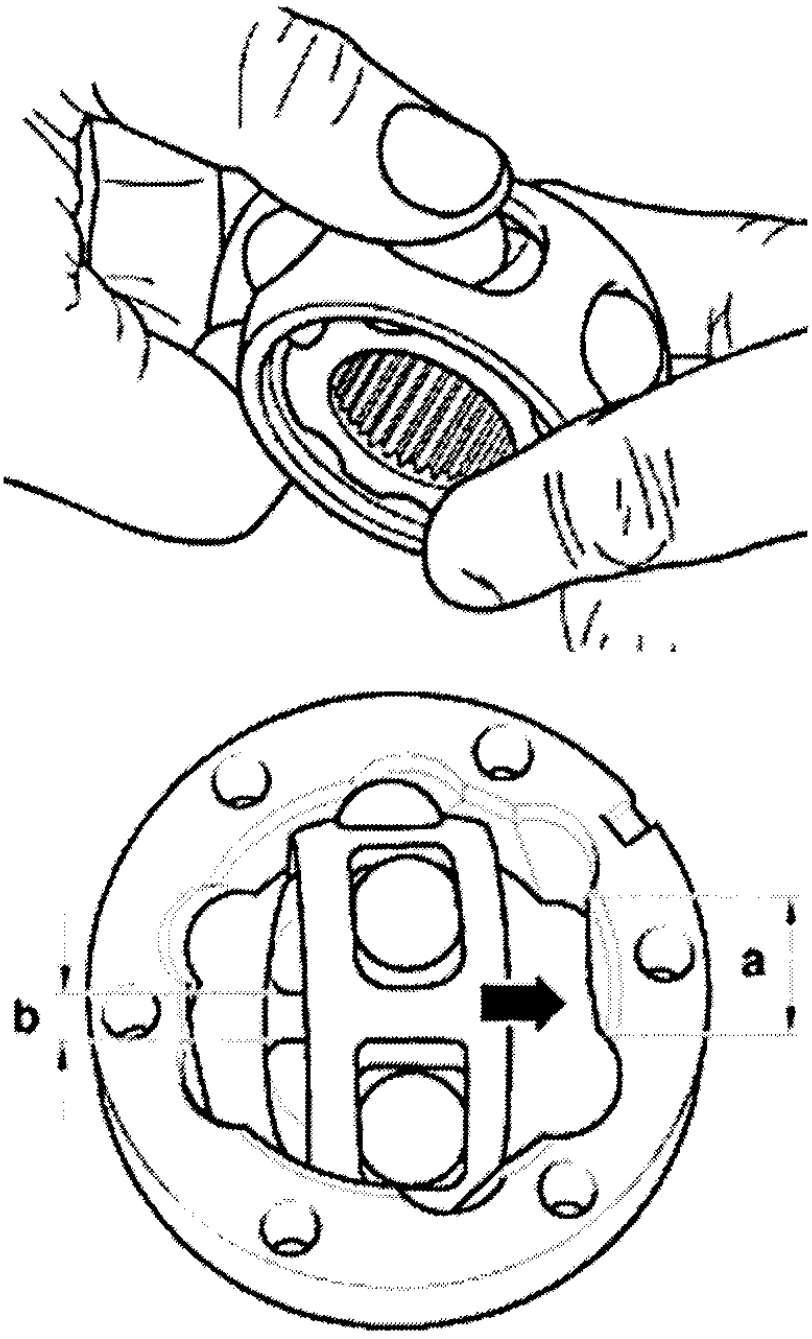


Fig. 29: Contacting Positions Of Joint Housing & Hub
Courtesy of AUDI OF AMERICA, INC.

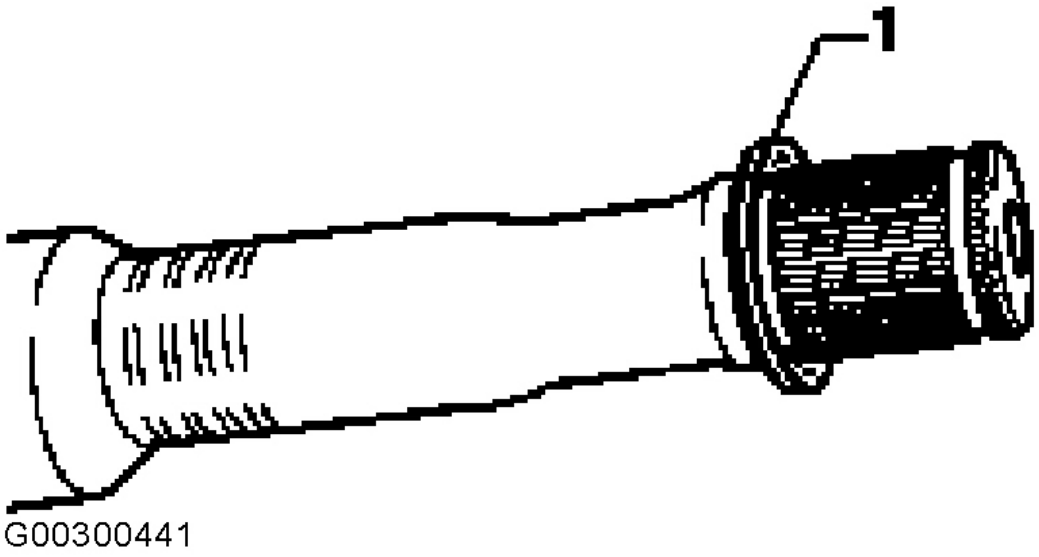


Fig. 30: Locating Spring Washer (Inner Joint)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

TRIPLE ROLLER JOINT

Disassembly, Inspection & Reassembly (AAR 2000)

1. Remove axle shaft. See **FRONT AXLE SHAFT** under REMOVAL & INSTALLATION.
2. Open clamp on joint and slide back protective boot on joint. Using a screwdriver, lift open cover tabs, and pry off cover. See **Fig. 31** .
3. Using a waterproof felt tipped pen, mark installation positions of triple-rotor joint housing (1), triple-rotor star (2), and axle shaft (3). See **Fig. 32** . Remove "O" ring (arrow) from groove. Remove circlip (4). Holding rotor joint, take axle shaft out of vise.
4. **CAUTION: Ensure rollers DO NOT slide off triple-rotor star and fall off.**

   Install axle shaft in press. See **Fig. 33** . Hold axle shaft, and press triple-rotor star off axle shaft. Remove triple-rotor star with roller and place them on a clean surface.
5. Pull joint off shaft. Pull boot off shaft. Clean shaft and housing thoroughly.
6. Slide triple-rotor joint boot onto shaft. Slide triple-rotor joint housing onto shaft.
7.

NOTE: Bevel on star faces toward shaft. This is used as an assembly aid.

Install triple-rotor star onto shaft per markings and press onto stop. Install circlip, and ensure it is seated correctly.

8. Press half of specified quantity of joint grease from repair kit into triple roller joint. See **TRIPLE ROLLER JOINT (AAR 2000)** table under LUBRICATION. Press other half of specified quantity of joint grease from repair kit into reverse side of triple roller joint.
9. **NOTE: Ridge in joint boot must seat in joint groove.**

   Install joint boot. Remove axle shaft from vise and re-clamp triple-rotor joint housing in vise. Install NEW seal (arrow) into groove. See **Fig. 32** .
10. Install NEW cover, positioning tabs on straight surfaces of joint housing. See **Fig. 31** . Holes of cover and joint housing must align. Install hose clamp. Ensure crimp in clamp (A) is located between securing flanges on joint housing (B). See **Fig. 34** . Tighten clamp with pliers V.A.G. (1275)
11. Install axle shaft. See **FRONT AXLE SHAFT** under REMOVAL & INSTALLATION.

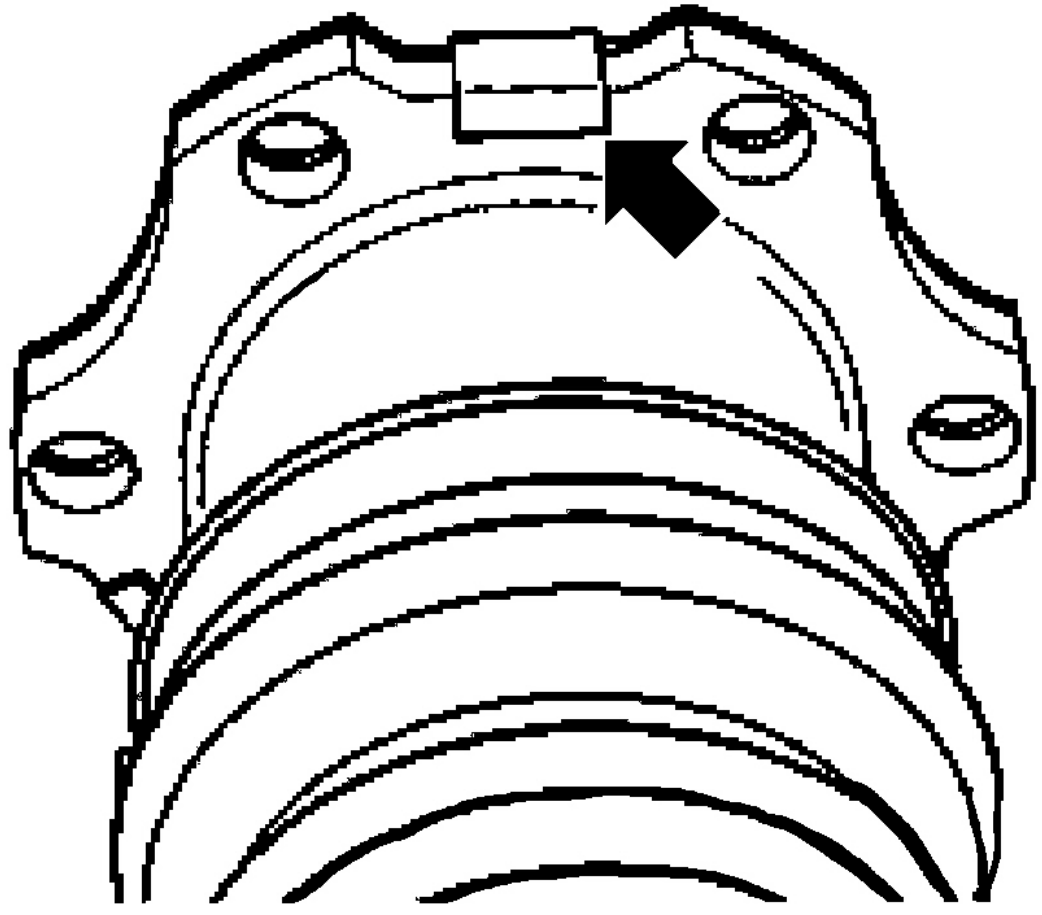
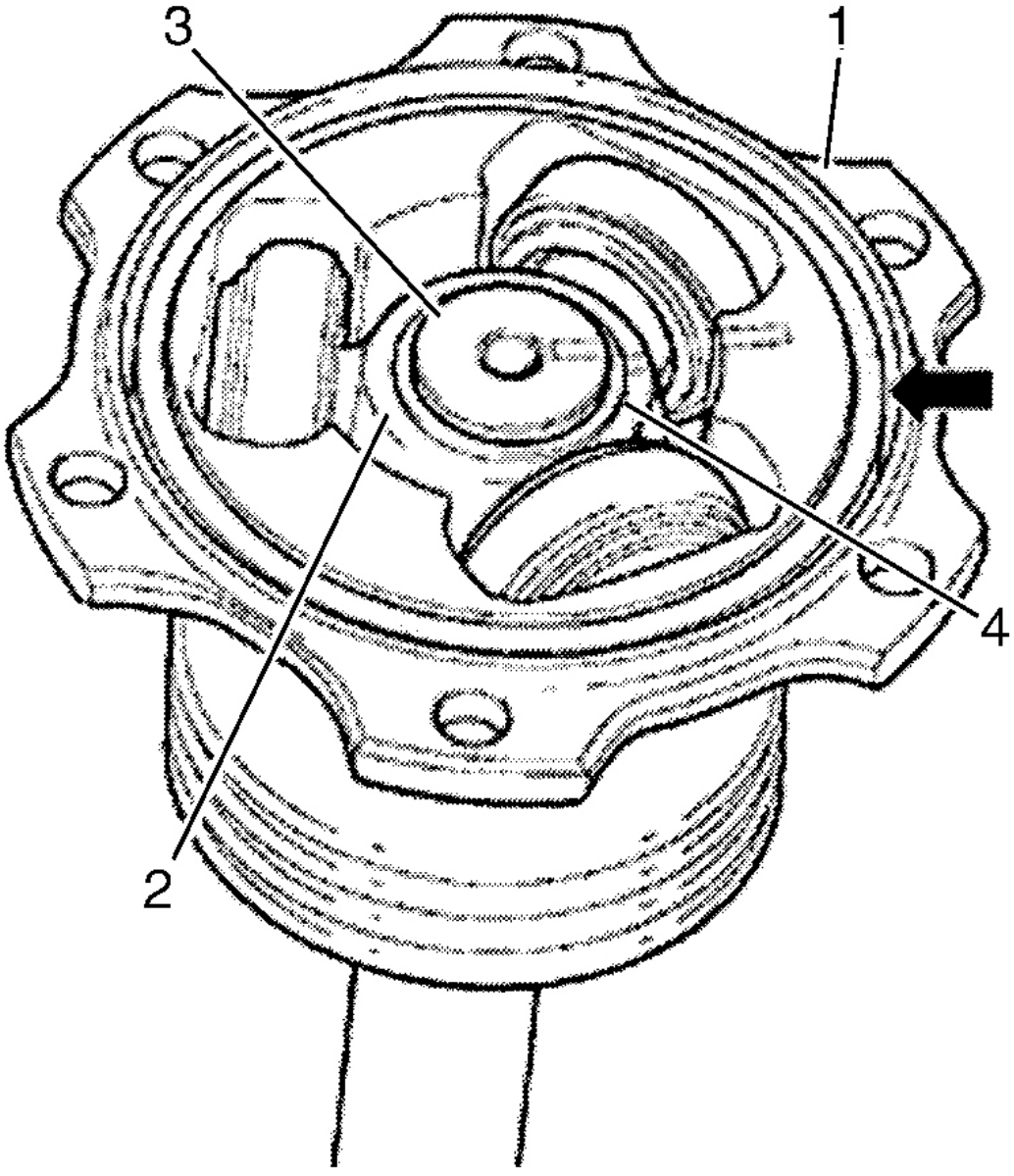


Fig. 31: Locating Tabs On Joint Housing
Courtesy of VOLKSWAGEN UNITED STATES, INC.



1 - Joint piece
2 - Triple-roller connection
3 - Drive axle
4 - Securing ring

G00284545

Fig. 32: Marking Inner Joint
Courtesy of AUDI OF AMERICA, INC.

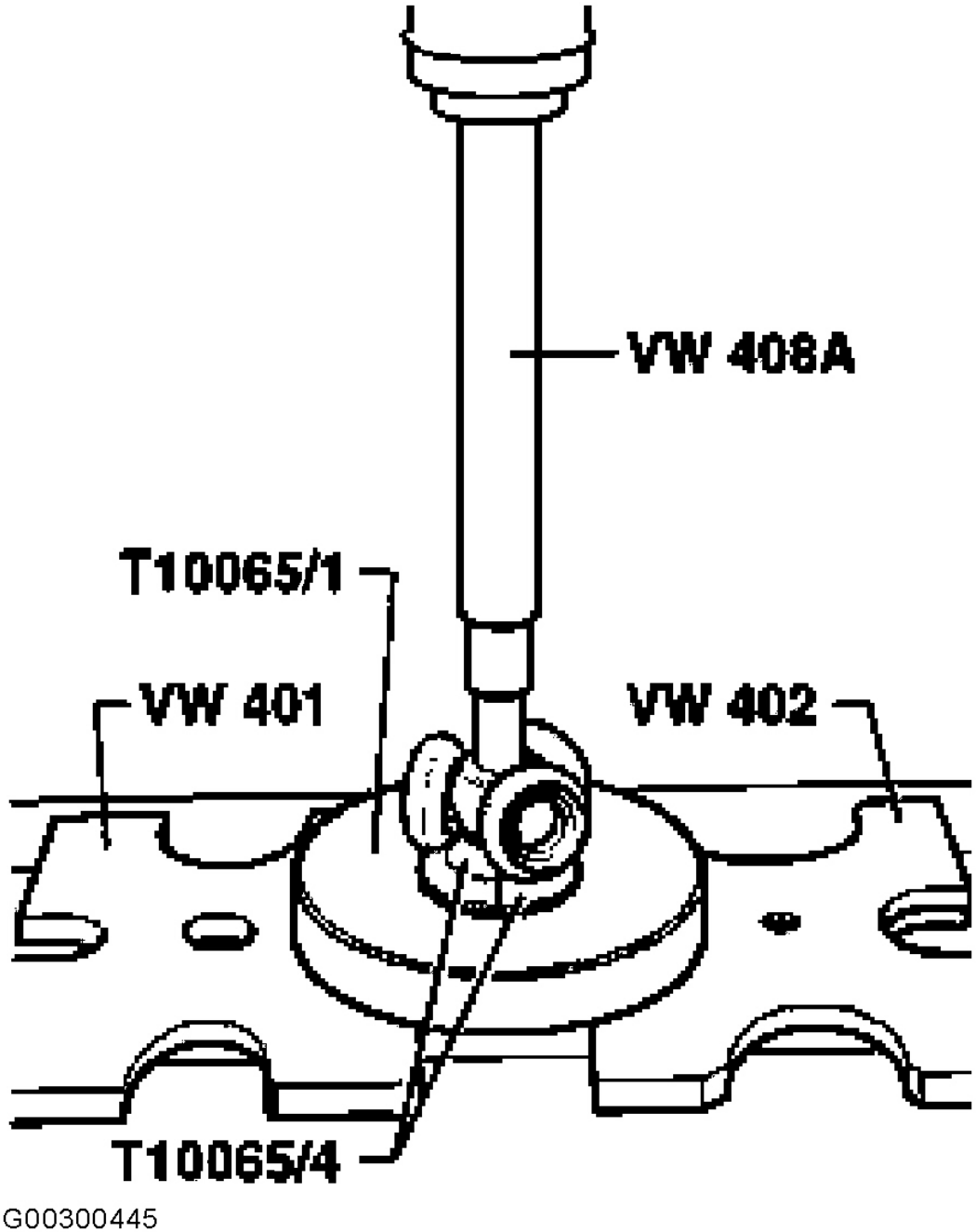


Fig. 33: Identifying Axle Shaft Press Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

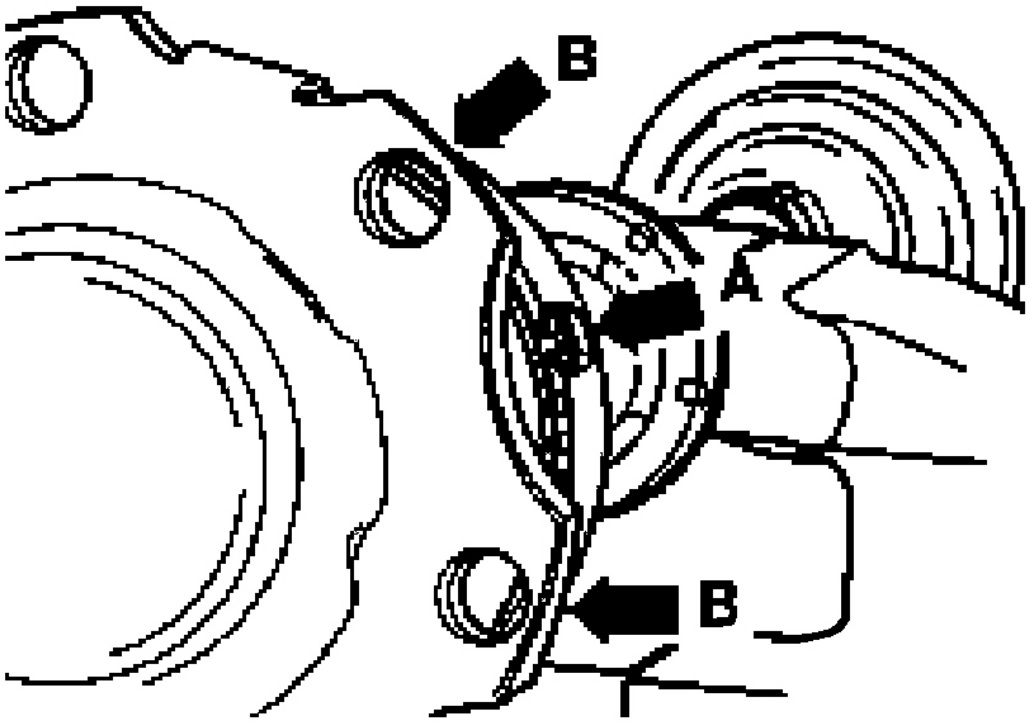


Fig. 34: Locating Crimp In Clip & Flanges
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Disassembly, Inspection & Reassembly (AAR 2900)

1. Remove axle shaft. See **FRONT AXLE SHAFT** under REMOVAL & INSTALLATION.
2. Open clamp at joint and slide back triple-rotor joint boot. Open clamp on axle shaft and slide back triple-rotor joint boot. Clamp axle shaft in vice.
3. **CAUTION: If parts are not marked, components are not assembled to their previous position. This may cause noise while driving.**

   NOTE: If cover cannot be pried off, drive screwdriver, or similar, on opposite side, then pry off cover.

   Using a screwdriver, pry off cover. Mark relative positions of triple-rotor joint housing (1), triple-rotor star (2) and axle shaft (3). See **Fig. 32** .
4.

CAUTION: Ensure rollers DO NOT slide off triple-rotor star and fall off.

Hold triple-rotor joint and remove axle shaft from vise. Hold axle shaft and triple-rotor joint housing vertical and using other hand slowly slide housing back.

5. Using felt tipped pen, mark relative positions of rollers (1) and triple-rotor star (2). See **Fig. 35** .
6. Remove rollers (1) and place on clean surface. Install axle shaft in press. Using pliers, remove circlip. See **Fig. 36** .
7. Install axle shaft in press. See **Fig. 33** . Hold axle shaft, and press triple-rotor star off axle shaft. Pull joint together with triple-rotor joint boot off shaft. Clean shaft and housing.
8. Slide triple-rotor joint boot clamp onto shaft. Slide triple-rotor joint boot onto shaft. Slide triple-rotor housing joint onto shaft.
9. **CAUTION: Ensure pressure does not exceed 6000 psi when pressing axle onto stop.**

   NOTE: Bevel on star faces toward shaft. This is used as an assembly aid.If necessary, coat axle shaft splines and star with lubricating paste (G 052 142 A2).

   Using a press, install triple-rotor star onto shaft stop. Install NEW circlip, ensuring it is seated correctly. Install rollers onto triple-rotor star per markings. See **Fig. 32** . Slide joint over rollers and hold.
10. Press specified amount of grease from repair kit, into triple roller joint and reverse side of triple-roller joint. See **TRIPLE ROLLER JOINT (AAR 2900)** table under LUBRICATION. Place seal from repair kit into groove of triple roller joint.
11. **NOTE: Circlip must be heard when it seats.**

    Install axle shaft in press. Press cover into triple roller joint until circlip can be installed. Insert circlip, and ensure it is seated correctly.
12. Install joint protective cover. Position triple roller joint approximately in middle of sliding part, between "min" and "max". Hold triple roller joint in this position and lift boot slightly (arrow) to vent boot. See **Fig. 37** .
13. **NOTE: Holes of cover and joint housing must align.**

    Install NEW cover, positioning tabs on straight surfaces of joint housing. See **Fig. 31** . Holes of cover and joint housing must align. Install hose clip. Ensure crimp in clip (A) is located between securing flanges on joint housing (B). See **Fig. 34** . Tighten clamp with pliers V.A.G. (1275)
14. Install axle shaft. See **FRONT AXLE SHAFT** under REMOVAL & INSTALLATION.

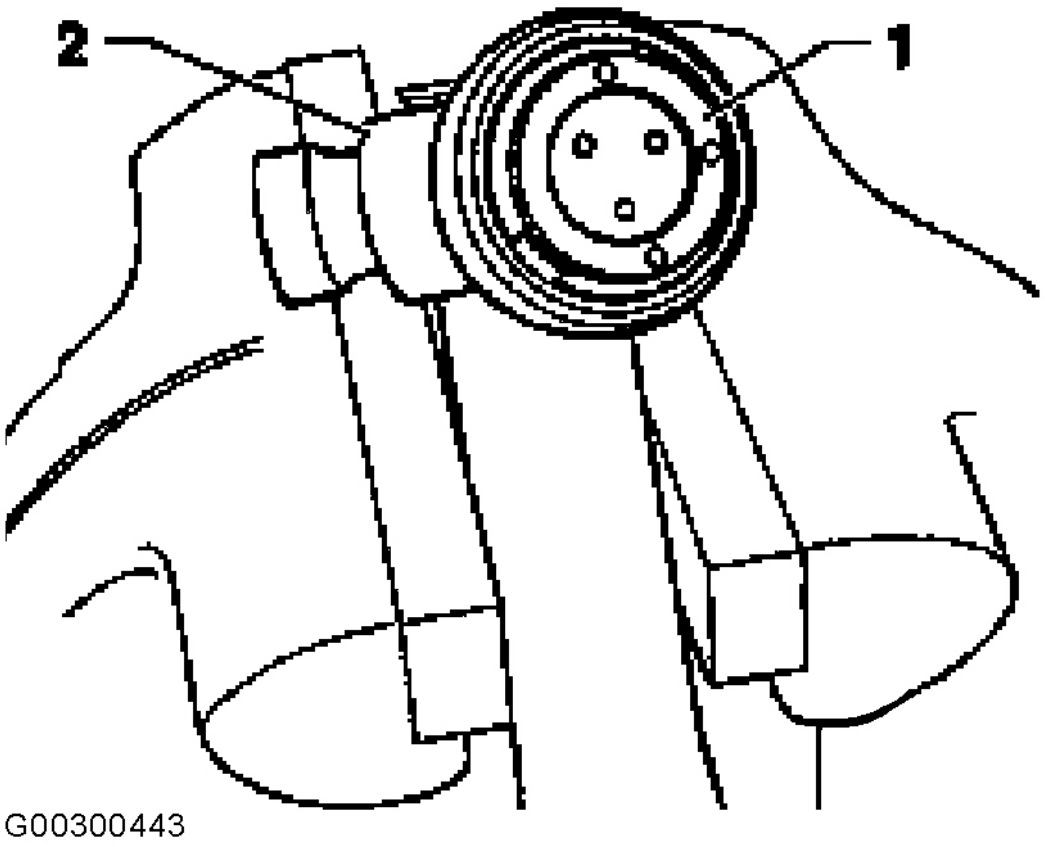


Fig. 35: Identifying Rollers & Triple-Rotor Star
Courtesy of VOLKSWAGEN UNITED STATES, INC.

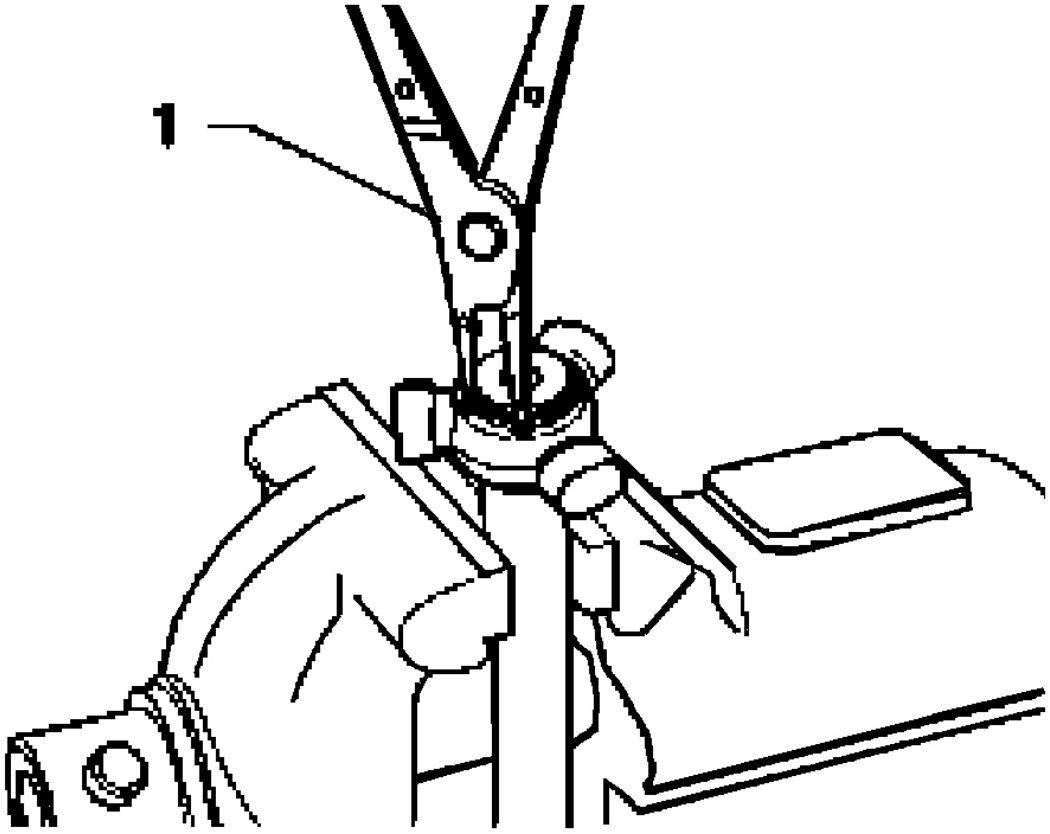


Fig. 36: Removing Circlip
Courtesy of VOLKSWAGEN UNITED STATES, INC.

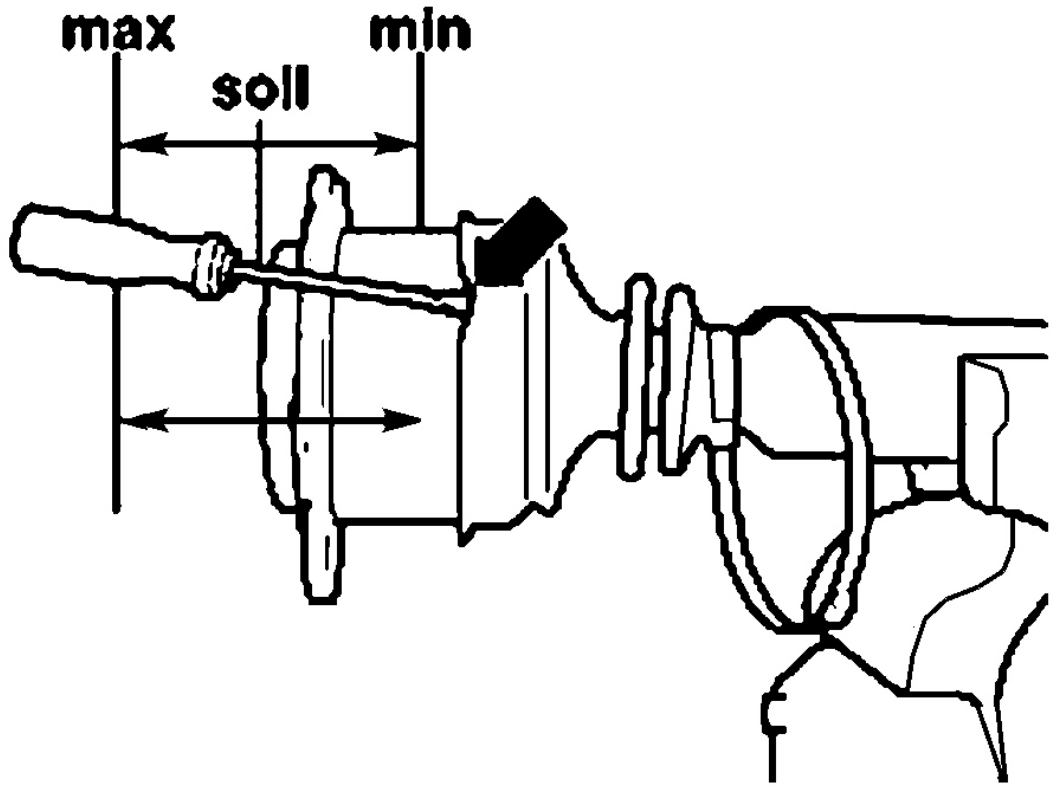


Fig. 37: Installation Position Of Triple Roller Joint
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Disassembly, Inspection & Reassembly (AAR 3300i)

1. Open clamp at joint and slide back joint boot. Open clamp on shaft and slide back axle shaft joint boot. Pull joint off rollers from tripod star. Using pliers (VX 161 A) or equivalent, remove circlip. See **Fig. 36** .
2. Insert axle shaft in press. Press out triple roller star off axle shaft. See **Fig. 33** . Pull axle shaft protective boot from shaft. Clean shaft, joint and groove for oil seal.
3. Slide small clamp for joint protective boot into shaft. Slide axle shaft protective boot into shaft.
4.

CAUTION: Ensure pressure does not exceed 6000 psi when pressing axle onto stop.

NOTE: Bevel on star faces toward shaft. This is used as an assembly aid. If necessary, coat axle shaft splines and star with lubricating paste (G 052 142 A2).

Using a press, install triple-rotor star onto shaft stop. Install NEW circlip, ensuring it is seated correctly. Install rollers onto triple-rotor star per markings. See **Fig. 32** . Slide joint over rollers and hold.

5. Press specified amount of grease from repair kit, into joint. See **TRIPLE ROLLER JOINT (AAR 3300 i)** table under LUBRICATION. Slide joint over rollers and hold. Press specified amount of grease from repair set into axle shaft protective boot. Install axle shaft protective boot.
6. Tighten hose clamp and small clamp with pliers V.A.G. (1275).
7. Install axle shaft. See **FRONT AXLE SHAFT** under REMOVAL & INSTALLATION.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Axle Shaft Flange-To-Transmission Bolt	
M8 X 18	30 (40)
M8 X 28	30 (40)
M8 X 48	30 (40)
Axle Shaft Flange-To-Transmission Bolt (Previous)	
M10 X 20	52 (70)
M10 X 48	52 (70)
Axle Shaft Flange-To-Transmission Bolt (NEW)	
M10 X 23	52 (70)
M10 X 52	52 (70)
Axle Shaft Wheel Hub 12-Point Nut	
Step 1	148 (200)
Step 2	Loosen 180 Degrees
Step 3	Turn Wheel Hub 180 Degrees
Step 4	37 (50)
Step 5	Turn An Additional 60 Degrees
Ball Joint-To-Control Arm Bolt (1)	
Step 1	15 (20)
Step 2	Turn An Additional 90 Degrees
CV Joint Boot Hose Clamp (Large Diameter) (2)	15 (20)
CV Joint Boot Hose Clamp (Small Diameter) (2)	18 (25)
Pendulum Support-To-Subframe	18 (25)
Wheel Bolt	89 (120)

(1) Manufacturer recommends using NEW bolt and nut.

(2) Torque specification is for use with V.A.G. (1682). See **Fig. 24** and **Fig. 25** .

SPECIAL TOOLS

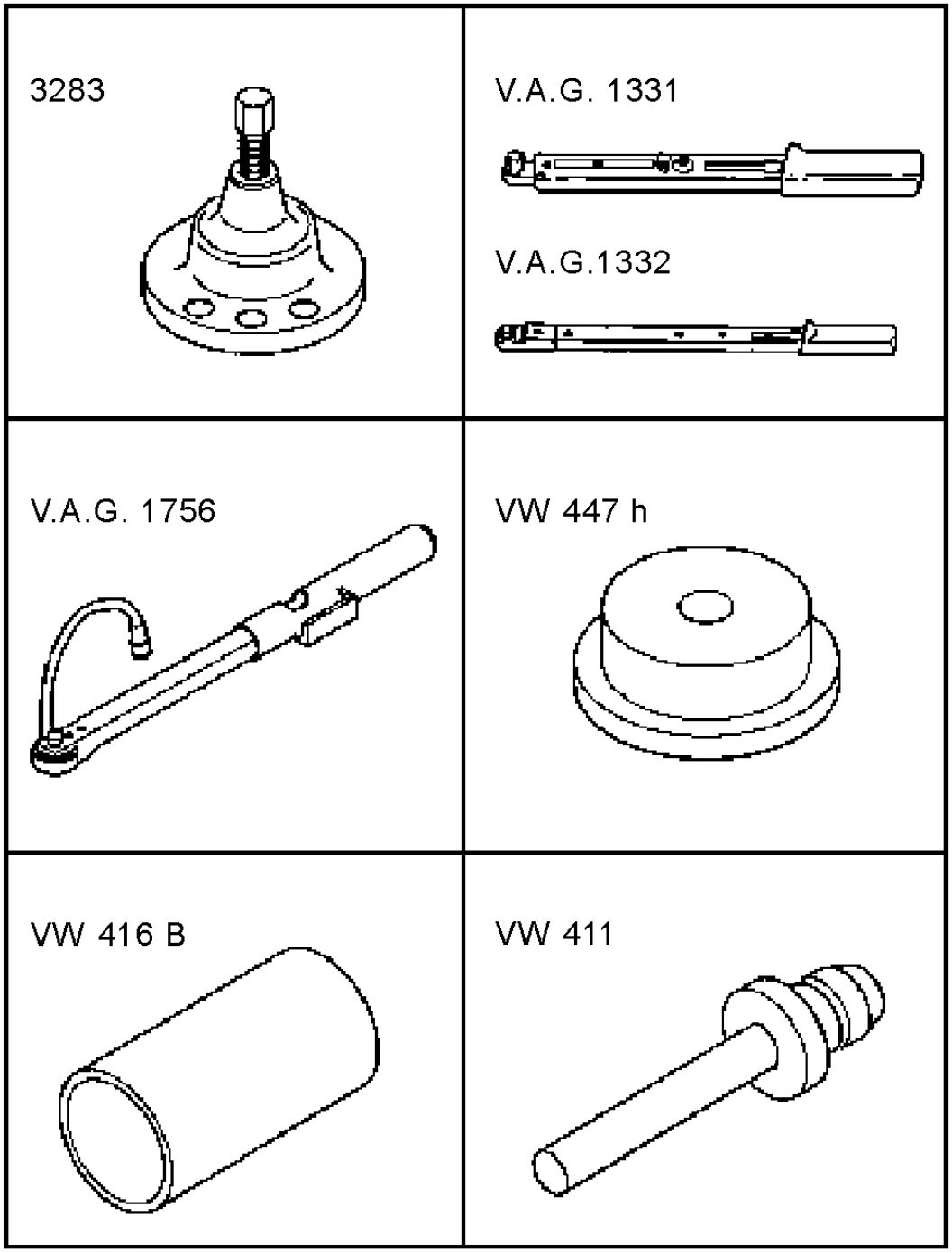


Fig. 38: Identifying Special Tools (1 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

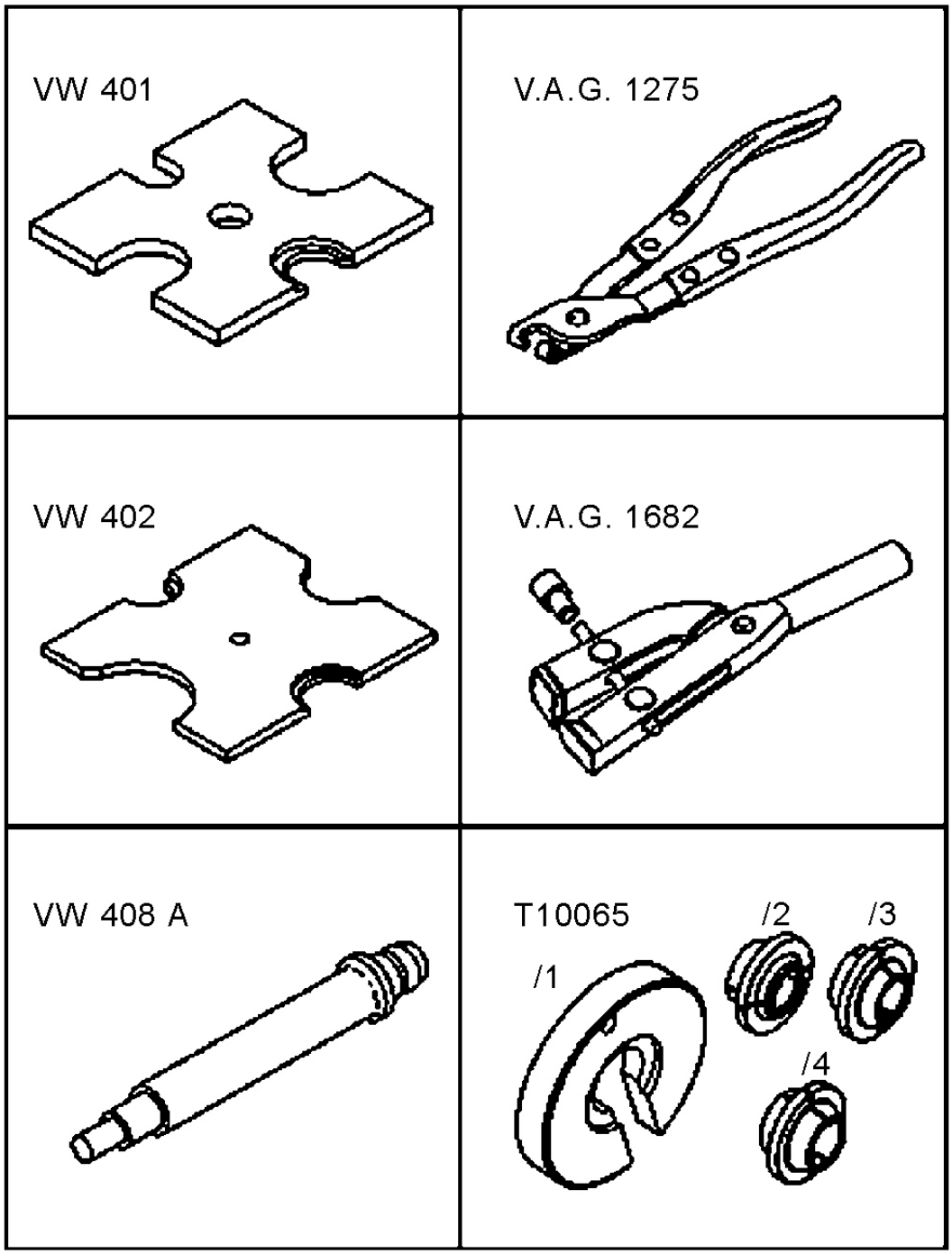


Fig. 39: Identifying Special Tools (2 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.